VOLUME XL NUMBER SIX

THE NATIONAL GEOGRAPHIC MAGAZINE

DECEMBER, 1921

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Our Map of the Pacific

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IMMEDIATELY after the terrific eruption of the world's largest crater, Mt. Katmai, in Alaska, a National Geographic Society expedition was sent to make observations of this remarkable phenomenon. Four expeditions have followed and the extraordinary scientific data resultant given to the world. In this vicinity an eighth wonder of the world was discovered and explored—"The Valley of Ten Thousand Smokes," a vast area of steaming, spouting fissures. As a result of The Society's discoveries this area has been created a National Monument by proclamation of the President of the United States.

AT an expense of over $50,000 The Society sent a notable series of expeditions into Peru to investigate the traces of the Inca race. Their discoveries form a large share of our knowledge of a civilization which was waning when Pizarro first set foot in Peru.

THE Society also had the honor of subscribing a substantial sum to the historic expedition of Admiral Peary, who discovered the North Pole.

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Mr. Camp devised these twelve remarkable exercises during the war, in response to the appeal of the commandant of one of the great naval training stations. The commandant wanted something better and more interesting than the regular "Swedish setting-up exercises," which produced staleness in the men, and he thought Walter Camp ought to be able to supply it if anybody could.

The naval officer's letter set Mr. Camp to thinking. It struck him that what was needed was a series of exercises to take the place of the *natural* activity of the Indian or any other uncivilized man. He realized that the man of today is just as much a "caged animal" as a tiger in a menagerie, and that the average man's way of living weakens the muscles of the chest and abdomen.

A Tip From a Tiger

What did the tiger do for exercise? Mr. Camp went to the Bronx Park Zoo to find out. He found that the tiger was always busy stretching and twisting and turning his body, his trunk; he was exercising the very muscles that tend to become weak when an animal is kept in a cage, or a man in an office.

Then Mr. Camp saw where all systems of calisthenic exercises have been weak—they develop the arms and legs, which are not so important, but scarcely develop the trunk at all. The result was that he worked out the "Daily Dozen." This is why these remarkable exercises have produced such amazing results for every man, woman, and child who has used them:—they put the body through exactly those movements which are needed to develop the trunk muscles and keep them at "concert

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During the war, Walter Camp taught the "Daily Dozen" to members of the Cabinet in Washington and to many other officials—men like Charles M. Schwab and Franklin Roosevelt, men who had to do a vastly increased amount of work without breaking down. The "Daily Dozen" kept whole organizations "on their toes" for extra production.

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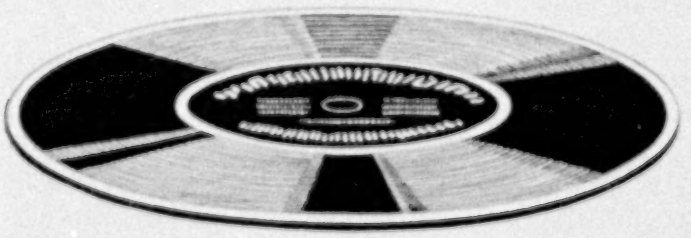

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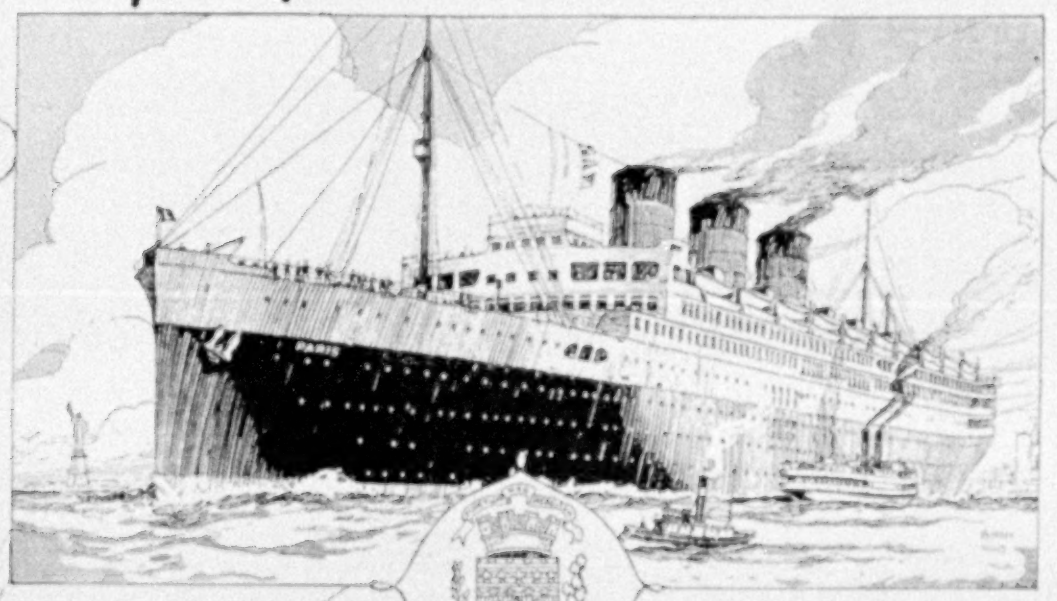

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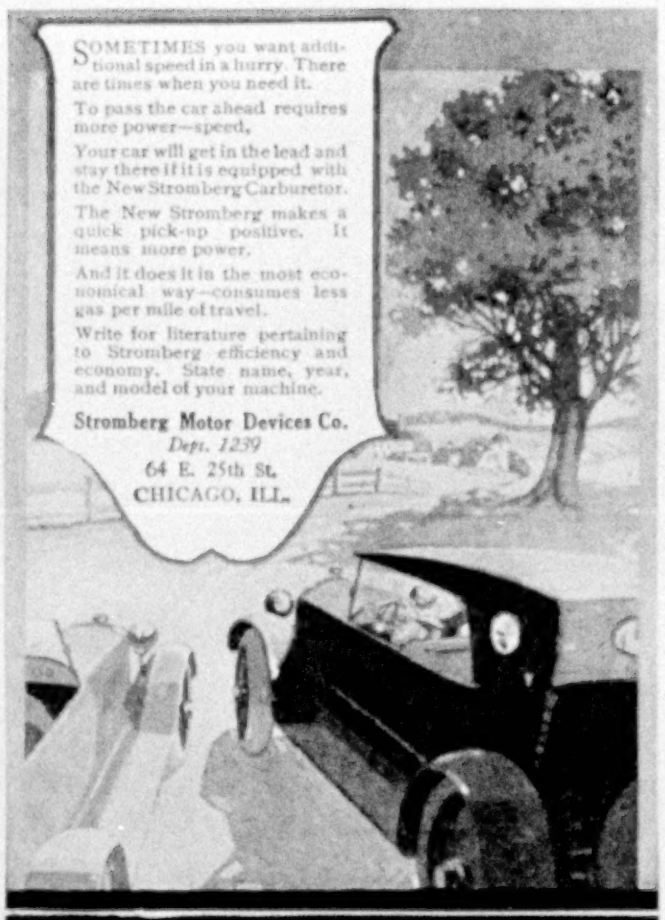

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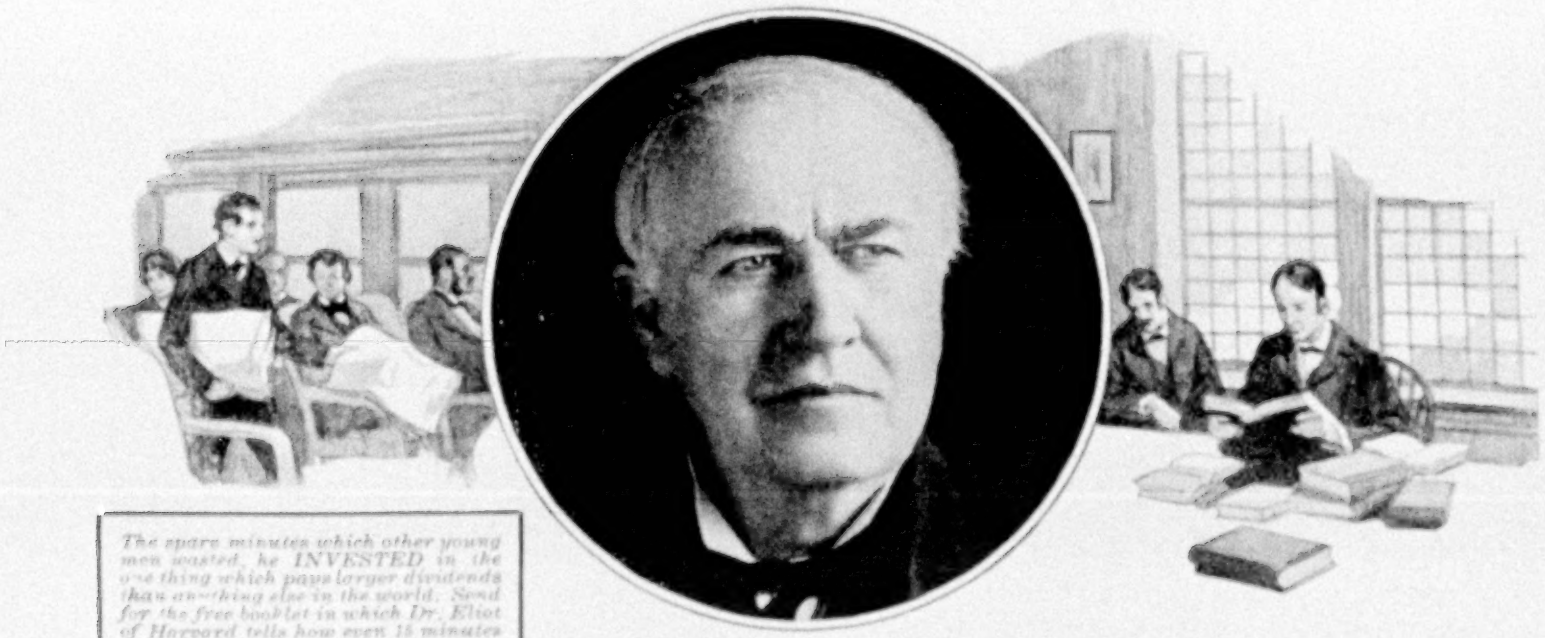

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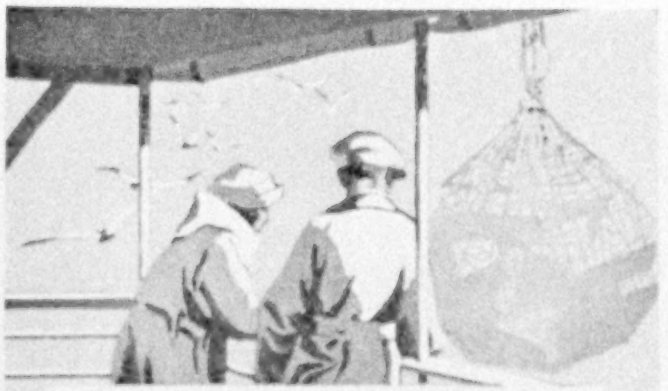

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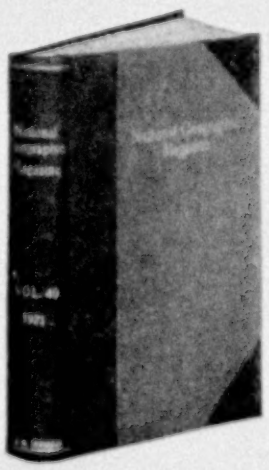

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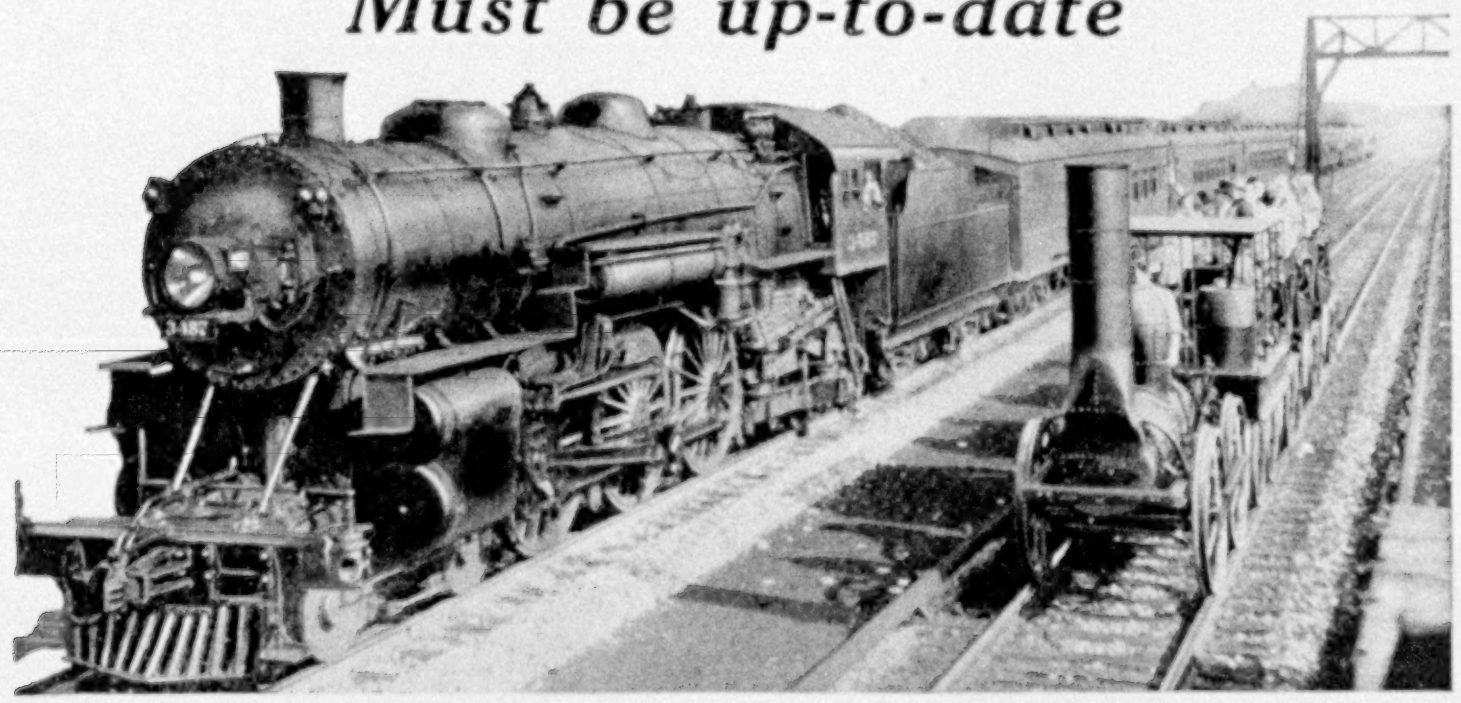

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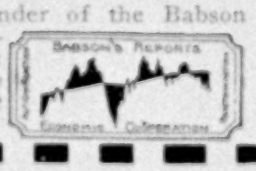

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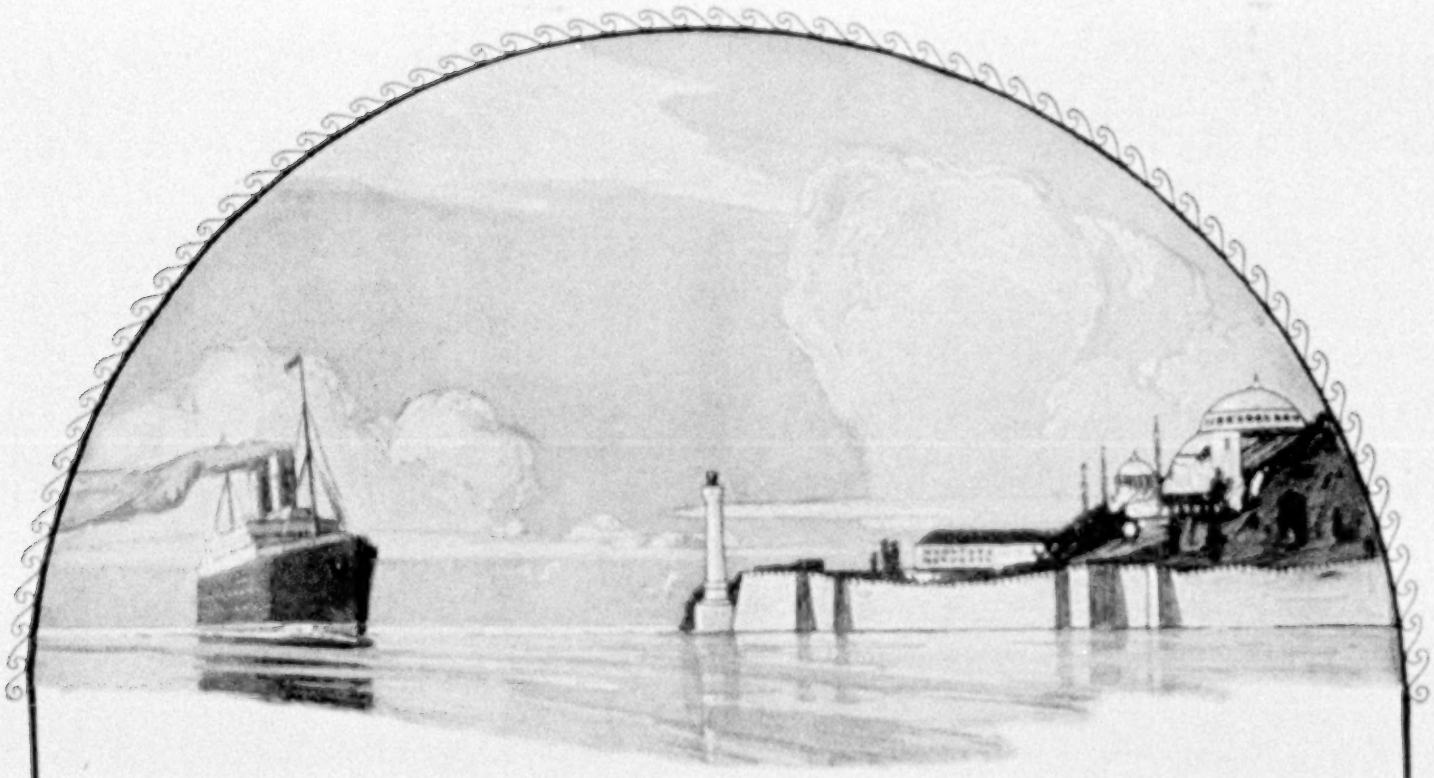

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VOL. XL, No. 6 WASHINGTON DECEMBER, 1921

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THE ISLANDS OF THE PACIFIC*

By J. P. Thomson, C. B. E., LL. D.

Honorary Secretary and Treasurer, Royal Geographical Society of Australasia

WHAT memories of the past the place-names of the coral-girt islands of the South Pacific Ocean revive! They bring to the reflective mind the romantic side of life; they recall the daring exploits of adventuresome enterprise on the part of those early navigators whose romantic career has fired many a youthful breast with hopeful enthusiasm; they remind us of the illuminating pen sketches by Robert Louis Stevenson; they bring to our thoughts stories of thrilling achievements in the piratical operations of that one-time buccaneer, Captain Bully Hayes.

They bring us face to face with primitive life in all its varied phases, ranging from the nomadic peregrinations of the native trader to the precarious existence of the beach-comber; from the reef harvesters to the tribal councilors, and from the wild head-hunters to the bush cannibals; from the excited warriors, in all their fantastic accouterments, to the primitive village maiden, bedecked in garlands of wild flowers and habited in the simplest form of grass skirt; from the elaborate local native court (Bose Levu), at which the great district chieftains are represented, to the all-embracing provincial parliament of the people (Bose vaka Turanga), where the ruling personages assemble.

Among these islands have occurred some of the most wonderful manifestations of the stupendous forces of nature ever witnessed by the eye of man, in the modification, alteration, and creation of land forms and in local disturbances of vast magnitude, through violent earthquakes or eruptive phenomena. Here, too, have occurred wide devastations and great destruction to property following the wake of periodical hurricanes along the equatorial belt.

These facts and many others come crowding to the mind when speaking of Polynesia, the South Sea Islands or their synonyms. While there is certainly no place on earth more beautiful, more enchanting, or more seductive to the island-dweller, there are few places where the forces of nature are more active, more varied, more constructive, or even more devastating.

THE MARVEL OF THE CORAL REEF

Take, for example, the coral reef phenomenon by which islands are formed and connections established on a vast scale between widely separated areas, extending over thousands of miles of ocean. Also be it remembered that these immense submarine and subaërial coral masses, on which the very existence and stability of most of the Polynesian islands seem to depend, are the product of one of those low forms of animal life that enter so largely into the economy of nature and make us feel that the combined efforts of men are comparatively feeble and ineffective.

*See Map of the Islands of the Pacific issued as a supplement with this number of THE GEOGRAPHIC.

Photograph by J. W. Beattie

A FIGHTING MAN OF AHIA, IN THE SOLOMON GROUP

It is not customary for the men of the Solomons to carry arms within their own villages, but they take this precautionary measure when wandering in forest or along shore. The favorite weapon is either a spear or an adze.

XUM

Photograph by J. W. Beattie

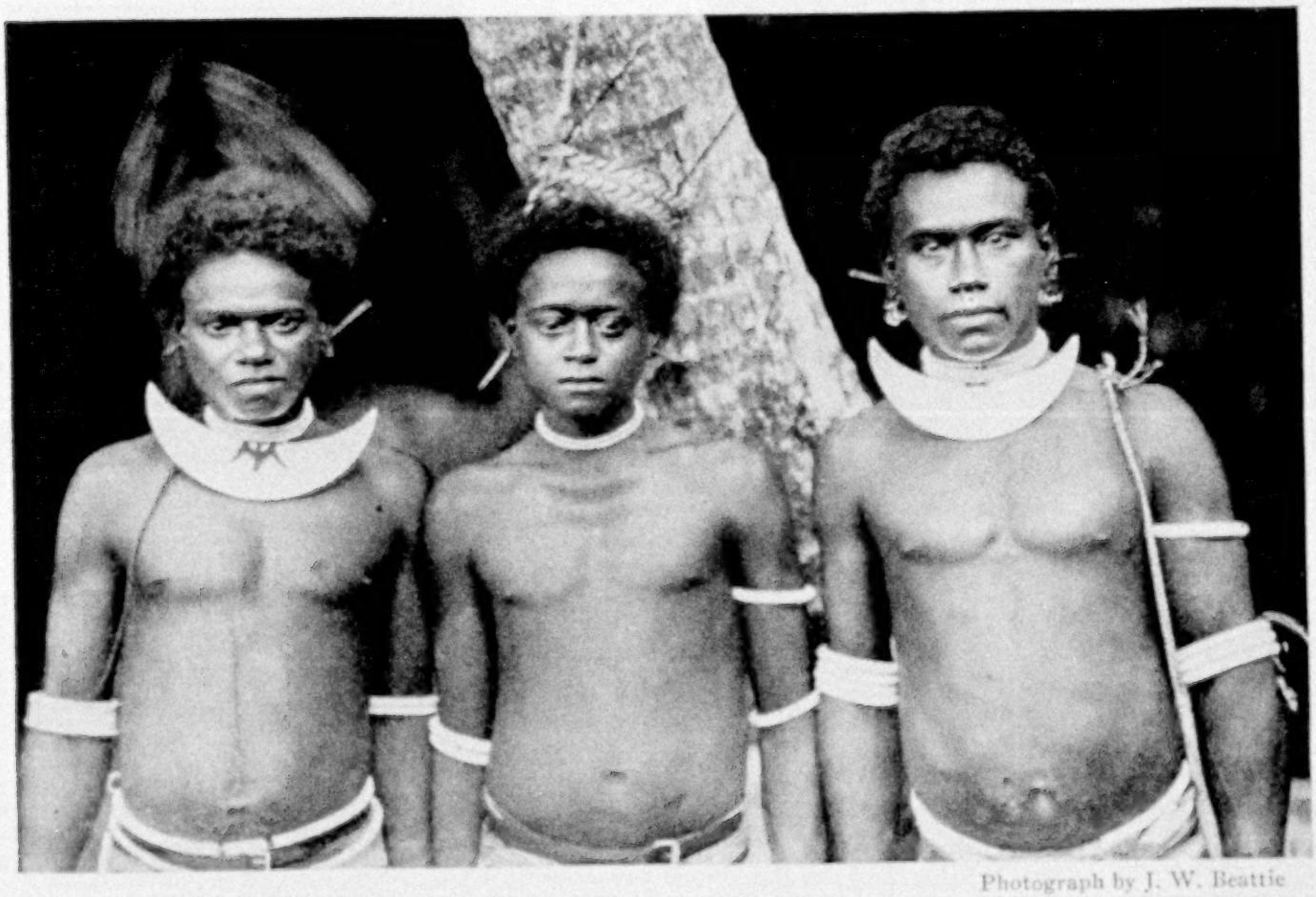
MENDAÑA, THE 16TH CENTURY SPANISH NAVIGATOR, CALLED THESE "THE ISLANDS OF SOLOMON" IN ANTICIPATION OF THEIR NATURAL RICHES

To the left may be seen an islet with a shrine to a dead chieftain (see also illustration on page 546).

Photograph by J. W. Beattie

THE SOLOMON ISLANDS METHOD OF "LAYING A GHOST"

The natives fear ghosts. If a chief has been powerful in life, it is believed his ghost will be powerful after his death. A shrine is made containing relics—the skull of the chief or his cremated body—and gifts of food are placed on near-by stones. It is taboo to pass behind the shrine.



Photograph by J. W. Beattie

SOLOMON ISLANDS VANITY

The ornaments of a South Sea islander are few and simple. He likes a necklace of beads or dog's teeth, or armlets made of plaited fiber or cut from single shells, and a crescent-shaped decoration of large pearly shell.

Surely these remarkable coral formations are among the most truly wonderful evidences of lavish nature—mighty, far-reaching, and enduring.

There is nothing grander or more sublime than to be brought face to face with this ever-progressive and ever-expanding phenomenon—this vast, restless force, by which insular land-masses are formed and protected by encircling reefs, the waters of the ocean held in check and the fury of the waves subdued.

It is one of the greatest wonders of nature, placed beyond the controlling influence of man, indestructible except by its own evolutionary power, but limited in range to the tropical waters of the globe. In the Pacific Ocean it attains its greatest development and on the Queensland coast it is strikingly represented by the Great Barrier Reef, extending for over a thousand miles along the shores to Torres Strait and far beyond.

As a field for the marine biologist, the Great Barrier Reef, not yet fully explored, is of wide interest and has attracted attention in most of the scientific centers of the world, alluring to its fascinating waters representatives from both hemispheres of the globe.

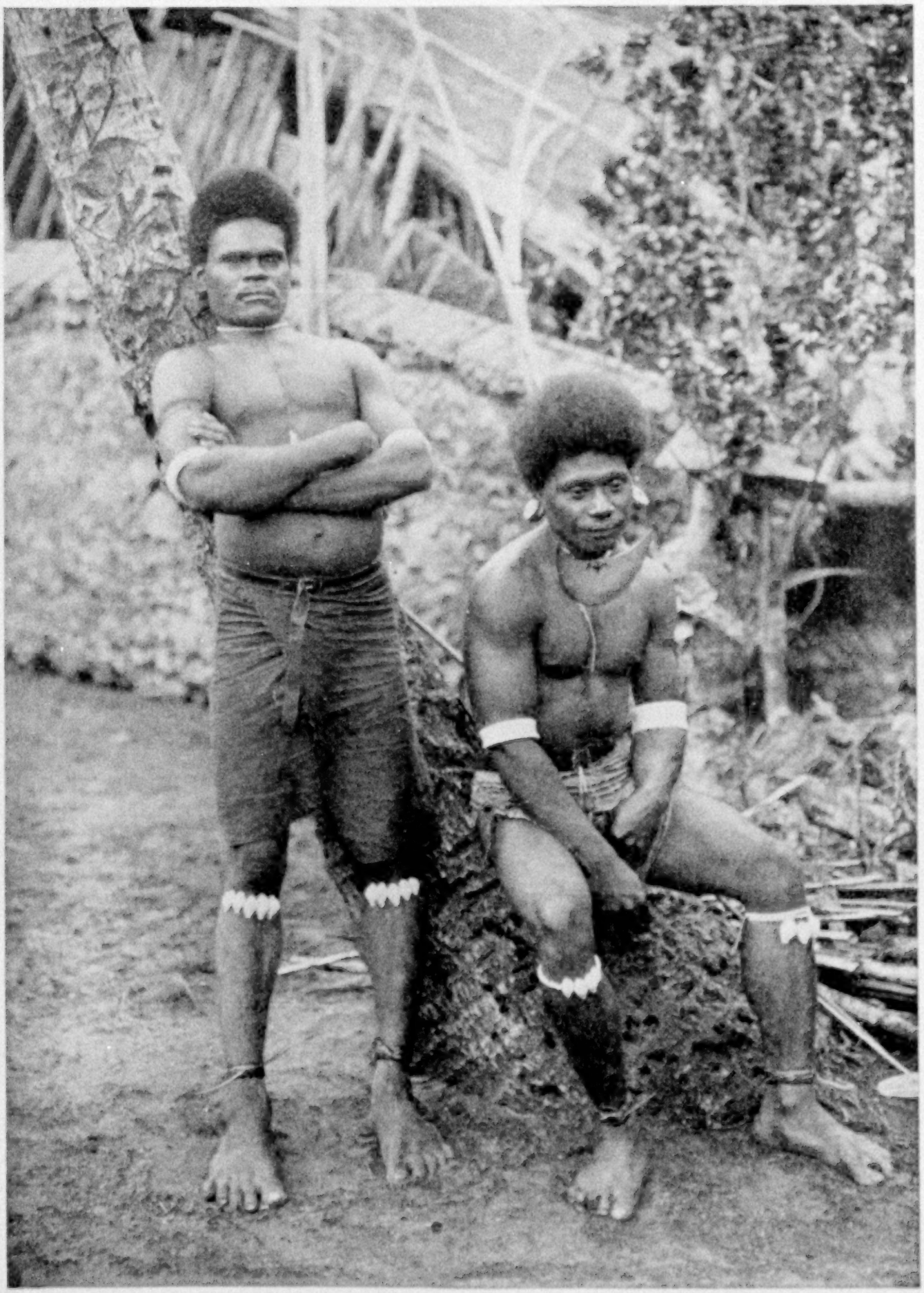
A VOLCANIC BELT FROM JAPAN TO PERU

Then, again, we find in this vast oceanic region an immense volcanic influence, a great seismic belt extending from Japan to the Peruvian coast and including New Guinea and New Zealand.

In some of the island groups the volcanoes are still in a state of activity, and several years ago the Samoan Island of Savaii was for a time the scene of one of the greatest eruptions ever witnessed.

Most of the coralline islands of eastern Polynesia, extending on both sides of the Equator, bear traces of former volcanic activity, as evidenced by the numerous extinct craters scattered over the land-masses. That they have long been quiescent is clear from the dense vegetation everywhere covering the surface, except, perhaps, on the precipitous crater rims, where the sheer walls of rock afford little encouragement to plant life.

Few people realize that the Pacific



Photograph by J. W. Beattie

YOUNG STALWARTS OF THE SOLOMON ISLANDS

The inhabitants of this group of the South Pacific islands have for generations had, in civilized countries, a reputation as unsavory as that of any people on the globe—cannibalism, infanticide, head-hunting, and the practical enslavement of their women being, until recently, among their common practices.

Photograph by J. W. Beattie

A TAMBU-HOUSE: SOLOMON ISLANDS

Toward the close of the day the front of the canoe-house is a rendezvous for the natives. Here they listen to and discuss the affairs of their little world. A festival marks the completion of a new tambu-house, and formerly was accompanied by the sacrifice of a human life, the flesh being eaten and several of the bones used as decorations.

Ocean covers more than a third part of the globe and contains within its vast periphery over half of the terrestrial water supply.

The influence exercised by this immense liquid surface on the climate and conditions of life in both hemispheres must be enormous, when we consider that it is bisected by the Equator and consequently exposed to the full force of the tropical sun. It is for this reason and because of the moist, equable temperature prevailing over the Polynesian region that we find in most of the oceanic islands great fertility of soil and a luxuriant vegetation, so that their rich natural resources afford ample provision for the inhabitants.

The early history of discovery in the "South Sea" goes away back to the days of Spanish maritime enterprise, in the beginning of the sixteenth century, when the Pacific Ocean was first seen by Balboa, on the 25th of September, 1513. Since then there have been many remarkable developments in the affairs of Polynesia, both in the occupation of the various groups of islands and in the life of the people.

MANY ISLAND GROUPS IN POLYNESIA

Geographically, the Polynesian region is occupied by numerous groups of islands of varying extent and importance, most of which are inhabited by a variety of peoples, generally known in Australia as Kanakas or South Sea Islanders.

Viewed in a broad and comprehensive light, this Polynesian Empire, if I may so call it, extends across the Pacific from the eastern waters of Australia and New Guinea for a hundred degrees of longitude to Easter Island. It includes the Bismarck Archipelago and Solomon group, New Caledonia and Fiji, the New Hebrides, Samoa, and Tonga, the Marshall and Caroline Islands, the Phœnix Group and Low Archipelago, the Hawaiian Islands, the Gilbert and Ellice Islands, the Society and Cook Islands, with numerous clusters of islands, reefs, and lagoons scattered over wide expanses of tropical ocean and studded like gems of emerald green on

Photograph from Dr. J. P. Thomson

DANCE FASHIONS IN NEW BRITAIN

The network that holds the leaves of a young coconut tree is as fine as India paper, very glossy, and of a beautiful silver color. Narrow strips of it are used as decorations by the natives in the "Kokomo" dance.

the vast coral sea that eternally surges along the equatorial belt of the great Pacific. Long regarded as the dream of early Spanish and Portuguese enterprise, these Polynesian islands have vast commercial possibilities.

MANY HARBORS OFFERING UNSURPASSED NAVAL BASES

Many of these Pacific groups possess beautiful harbors, commodious enough to shelter the largest ships of a major power. Most of them being guarded by impregnable barriers of coral reef, they would afford natural protection to all classes of shipping and could be utilized as naval bases of first-rate importance.

Commercially, the Pacific Island trade is a matter that will command world-wide attention in the affairs of national enterprise arising out of the World War. Profiting by her geographical position and the circumstances arising out of the war, Japan has made good use of her opportunities to occupy the Marshall Islands, over which she now holds a mandate, and in the struggle for a commercial footing in the Western Pacific she has shown herself a vigorous rival to British-Australian enterprise.

In physical structure these Polynesian islands are mostly composed of igneous or coralline rocks.

The moist southeast trade winds prevail over most of this region, the rainfall being generally high, especially in the eastern Solomons, about Bougainville Straits, 150 inches; Hawaii, 60 to 80 inches; New Caledonia, over 40 inches, and Suva, Fiji, 162 inches. On some of the low-lying atolls, however, the moisture-laden clouds pass over without any precipitation, and consequently there are occasionally narrow rainless zones, where accumulated deposits of guano occur, such as on Ocean and Nauru Islands (see pages 559 to 589). The rainy season usually lasts from November to April.

Although slightly relaxing, the climate on the whole is generally healthy, being free from endemic diseases, but malaria occurs on the low-lying areas in the Solomon and some other large islands.

There is an oceanic flora in the coralline groups, the prevailing forms being

Photograph from Dr. J. P. Thomson

A NEW BRITAIN NATIVE DANCE

Bodies which have been covered with oil and rubbed until they gleam and faces stained with red earth or berry juice present a weird picture to the island visitor. The women are not so fantastically dressed for the dance as the men, but they, too, are wearing their best "bibs and tuckers."

the coconut and a few other palms, the pandanus and bread-fruit tree. The edible roots are mostly represented by several varieties of the yam, the taro, and sweet potato. On the larger groups of islands, such as Fiji, the Hawaiian Archipelago, the Solomons, and New Britain, there is a rich forest vegetation mostly common to Australia and New Guinea, although generally the Papuan plants are more distinctively Asiatic in character.

ANIMAL LIFE IS RESTRICTED

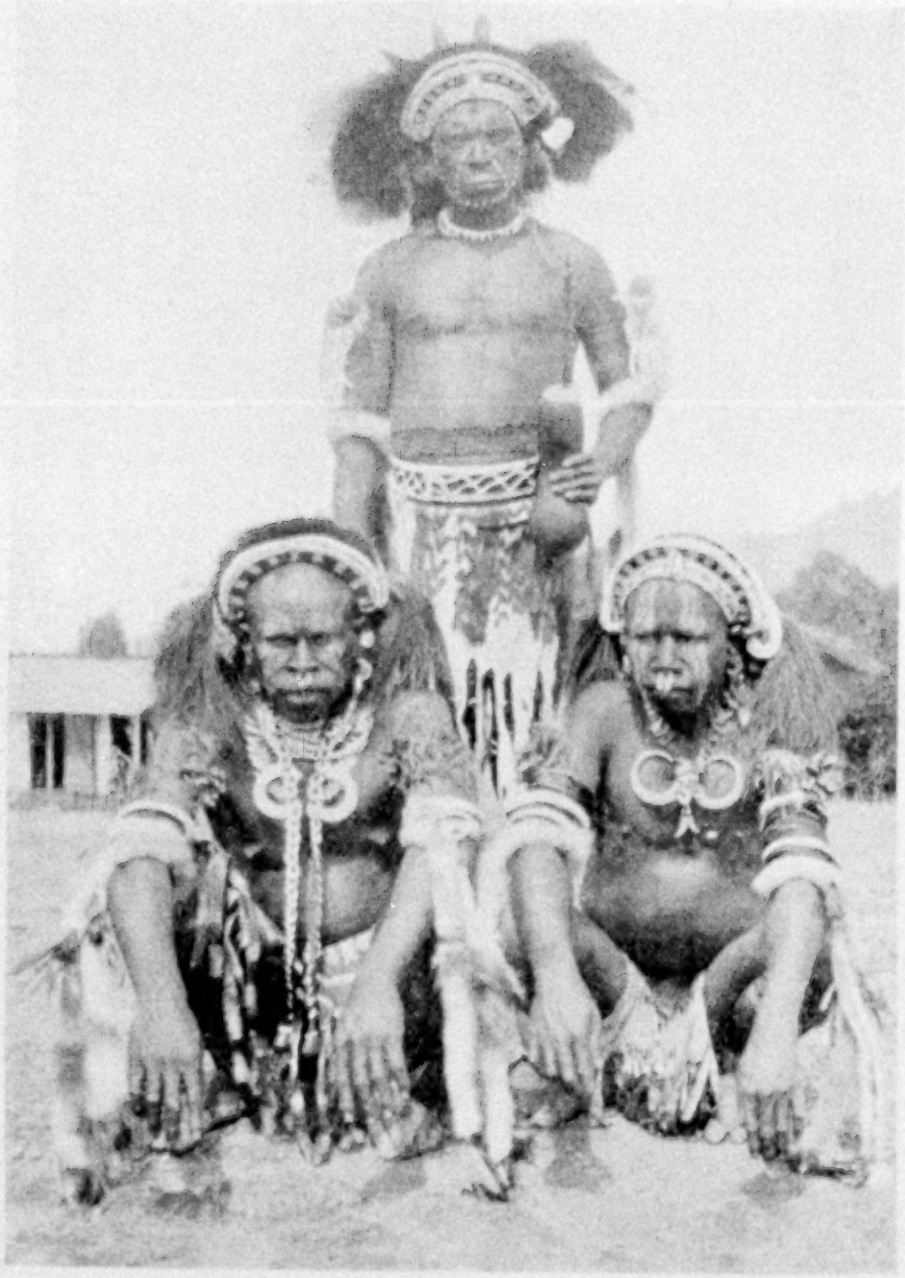
A remarkable feature of many of the Polynesian groups is the luxuriant vegetation on the southeast, or windward, side of the islands, in marked contrast to the northwest, or leeward, side, where the forest is restricted to extremely limited patches, with large reed-covered areas of wide extent, suggesting aridity and the absence of fertile soil. This is, no doubt, due to the fact that a larger percentage of moisture is deposited on the former, the prevailing southeast trade winds being comparatively dry by the time they reach the opposite side.

In strange contrast to their luxuriant plant life, the Pacific Islands cannot lay claim to a rich fauna except in birds, which are fairly numerous in New Caledonia, Fiji, and Hawaii. The dog and the pig have a wide range, being found everywhere within the influence of native settlement, but both have been introduced in comparatively recent times and are not indigenous to Polynesia.

There are several species of rodents and some representatives of the bat family, which appear to be the only indigenous mammals of which we have any knowledge. Even insects and reptiles are by no means plentiful, being chiefly confined to small lizards, centipedes, spiders, frogs, and harmless snakes.

In the Solomons the crocodile is met with, both in fresh-water streams and tidal estuaries, but here this saurian reaches its easternmost limit, as it occurs nowhere else in the island groups beyond.

From this brief description of the physical and climatic conditions of the Pacific islands, it must be clear that no place could be more ideal for the abode



Photograph from Dr. J. P. Thomson

NEW GUINEA CHIEFS

Rigid plaited frames, or curved bands with a groundwork of split cane, which support the cassowary or paradise feather head ornaments, are made by the men and worn at their dances. Necklaces consist chiefly of various sorts of disk-like shells, either cut or whole. Dancing aprons are made of bark cloth by men and women, but colored by men only. The nose rings are pencil-shaped pieces of shell about six inches long, which are passed through a hole in the nose.

of man than this great and enchanting oceanic region, this seductive "Insulandia," midst reef and palm, perpetual sunshine, and evergreen verdure, the dream of romantic youth, the home of early buccaneering enterprise, and the scene of great human struggles in tribal warfare, when the cannibal feast was deemed a fitting celebration of victory on the field of battle.

Some attention must now be given to the aboriginal inhabitants of Oceanica. Ethnologically considered, they naturally belong to two distinct classes or divisions of the human family, beginning first of all with the Polynesians, comprising the Maoris, Samoans, Fijians, and Tongans, whose racial affinities are still in dispute. In physical characteristics they are round-headed, narrow-nosed, of a light-brown café-au-lait color, with round orbits and lank, black hair. They are tall and well set up.

On the other hand, the second division, known to ethnologists as Melanesians, are long-headed, broad-nosed, of a sooty black color, with low orbits, black, frizzly hair, and are comparatively short of stature. Intellectually they are of a lower order than the former class, some being cannibals and head-hunters.

In the primitive state the Melanesians are savage and not infrequently treacherous, in contrast to the Polynesians, who, on the other hand, are altogether a superior race of people, intelligent and capable of reaching a high standard of culture, as shown by the positions they have gained in the public service in New Zealand and in Hawaii.

But even the Melanesians of the present, with the exception of those comparatively few natives living in remote and isolated inland villages, are not the same class of people as those met with in the early days of missionary enterprise, when pioneering intercourse was not always attended with freedom from danger to the white trader, recruiter of labor, or planter. Now it is an easy matter to land

on any of the islands and do business with the natives without risk of hostile attack. The Polynesian of today is in point of fact a keen trader and fully alive to the advantages of Western civilization.

PEOPLED BY PHŒNICIANS?

As to the origin of these Pacific islanders, opinions differ, it being held by some authorities that they have been allied to various races, including the Aryans, the American aborigines, and the Papuans.

In the writer's view, there can be no doubt that the islands of Polynesia were originally peopled by Phœnicians, whose migratory influence extended to the coast of Peru. This theory is strongly supported by the presence of the numerous cyclopean monuments, huge monolithic statues, paved avenues, and ramparts of walls of basaltic blocks over thirty feet in length, brought from great distances, on Easter Island and in the Carolines. It is evident that none of the present races could erect such immense structures as these (see pages 598 and 600).

Photograph by A. Nielen

A HAVEN OF REST: NEW GUINEA

With the yam, taro, and banana available, it is difficult to convince the Papuan that he should work for wages, for which he has no use.

The subject is fascinating and could be further elucidated to any extent, under circumstances appropriate to its discussion.

MYSTERIOUS RUINS ON EASTER ISLAND

The remarkable ruins of ancient settlement in the Caroline Islands are one of the mysteries of Polynesia and will probably never be solved. When it is considered that some of the stones forming the walls of those extensive ruins are of immense size and are supposed to have been brought from other islands of the group across storm-tossed channels and placed in their present position with precision and masterly skill, it is apparent that all this could not have been done by people akin to the present inhabitants, but must have been the handiwork of skilled craftsmen similar to the builders of the ancient ruins in Peru and Mexico and perhaps, also, Africa.

If this view be accepted as reasonably sound, we may assume that Polynesia was formerly the home of a civilization that has long since disappeared and become extinct, leaving imperishable monuments of skilled craftsmanship on Easter

Photograph from Dr. J. P. Thomson

TRADERS FROM THE HILLS ON A VISIT TO THE LOWLANDS: NEW GUINEA

There is a never-ending feud between the mountain and shore people of New Guinea. However, since necessity knows no law, the men come down from the hills to trade bows and arrows for pottery.

Island and the Carolines, or else the islanders are a decadent people.

Be this as it may, the fact remains that these ruins are a mystery to the present inhabitants of the Pacific islands, who have no knowledge of the art of building in stone and are ignorant of architecture, apart from their own primitive huts.

Even native tradition is singularly silent as to the origin of the inhabitants and their migratory movements among the island groups.

THE FATE OF THE EARLY INHABITANTS AN UNSOLVED PROBLEM

As to the fate of the original prehistoric inhabitants, who left such indelible traces of a higher order of civilization behind them as exists in the cyclopean ruins of the Carolines, we have no means of knowing, and mere conjecture can help but little. Whether they were overwhelmed by some mighty and widespread cataclysm or exterminated by epidemic disease will probably never be known.

Is it possible these ruins may have had their origin in some migratory wave sweeping across the Pacific from the shores of Asia to the coast of South America? Had this been the case we should expect to find some marked traces of Asiatic blood in the present inhabitants; but instead of this the dark Melanesians bear greater resemblance to the Papuans, while, next to the Patagonians, the Polynesians are the tallest people on the globe and are allied to the Maoris of New Zealand.

The only feature in which they bear any resemblance to the peoples of Eastern countries is in the practice of circumcision, and this is not general, but mostly confined to the Western Pacific.

In point of fact, there is stronger ground for assuming that the Polynesian peoples are remotely allied to the Australian aborigines, on account of the ceremony of initiation of youths into the rites of manhood which is practiced by both. In Australia this is known as the "Bora" ceremony, and in the Fiji group it is called

the "Nanga," both having the same significance and purpose, with only slight variations in the mode of procedure, as clearly established by the late Rev. Lorimer Fison in collaboration with the writer, whose investigations extended over several years.

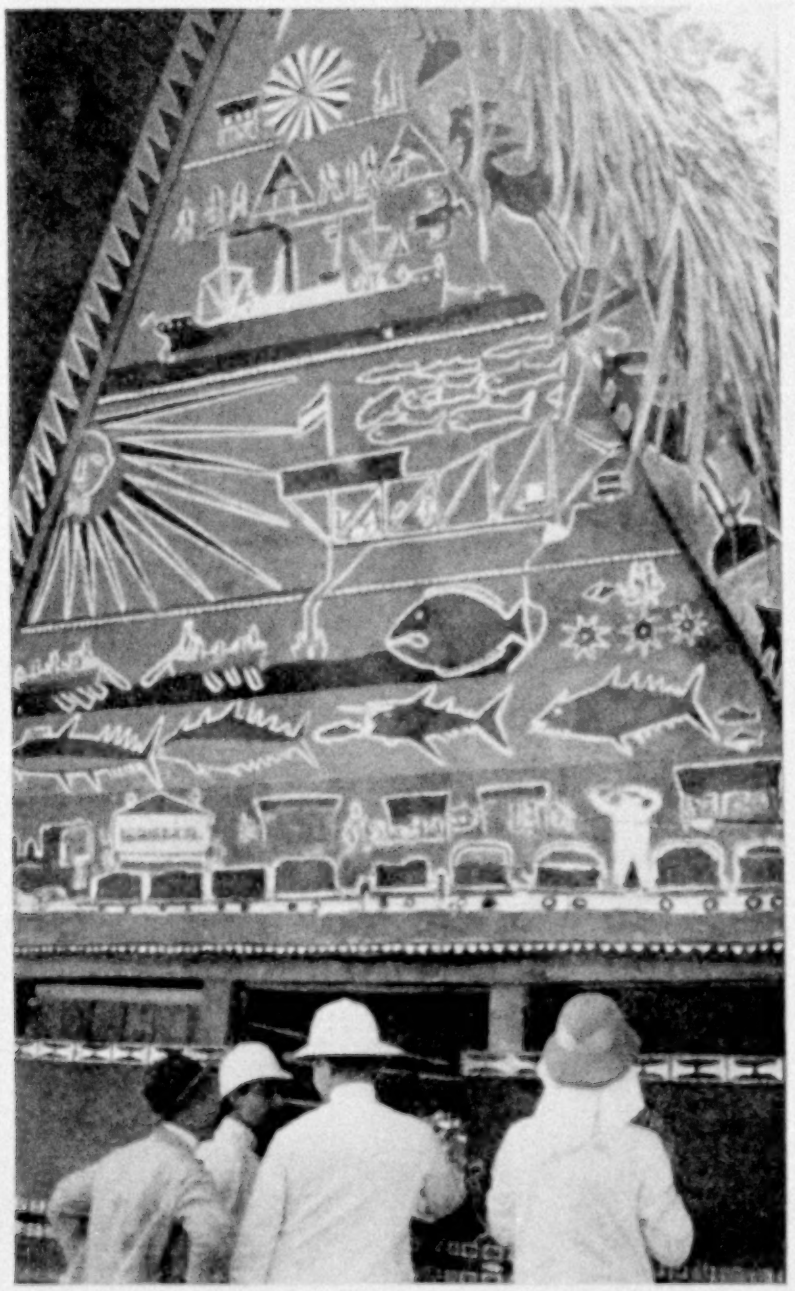
PHOSPHATES IN LIEU OF MINERAL WEALTH

In natural resources these Pacific islands differ to some extent from Australia, New Zealand, and New Guinea, there being, so far as is known, an absence of great and rich mineral deposits; but the soils are extremely rich, and for the production of sugar, cotton, rubber, coconuts, bananas, coffee, cocoa, rice, pineapples, and many varieties of fruit and vegetables they are eminently suitable and probably unsurpassed. It would indeed be difficult to name any product of tropical origin that could not flourish in the fertile soils of Polynesia.

Among the greatest of all the natural resources of these oceanic territories the enormous deposits of high-grade phosphates on several of the Polynesian islands are of prime importance. This is especially so in the case of Nauru, or Pleasant Island, a small, isolated spot half a degree south of the Equator and rising about twenty feet above sea-level. It is estimated by Dr. Paul Hombrun to contain about 497,700,000 tons of the richest phosphates to be obtained anywhere, the quantitative analysis giving from 83 to 90 per cent of tricalcium phosphate (see page 567).

Although this remarkable little isle has no harbor, the phosphates are loaded into the freighters at the rate of 100 tons per hour by special contrivances. The Ocean Island high-grade phosphate deposits are estimated at 12,500,000 tons.

There are also rich phosphate deposits on the islands of Angaur, in the Pelew group, and Makatea, the estimated quantity on the latter—an island belonging to France, on the western side of the Tuamotu or Low Archipelago—being 10,000,000 tons.



Photograph by A. Nielen

MURAL ART IN NEW GUINEA

PACIFIC ISLANDS DISTRIBUTED AMONG MANY NATIONS

Before the World War the Nauru and Angaur deposits were in German hands. This suggests some brief consideration of the political or pre-war condition of these Pacific groups, especially in the light of their occupation by European powers and their present relation to the Australian continent and to New Zealand.

At the outbreak of the World War the Pacific islands were in the possession of the United States of America, Great

Photograph by J. W. Beattie

SUCH CASCADES AS THIS ON THE PACHU RIVER, IN CHOISEUL, SERVE TO JUSTIFY THE USE OF THE PHRASE "SCENIC PARADISE," SO OFTEN APPLIED TO THE ISLANDS OF THE PACIFIC

Photograph from Dr. J. P. Thomson

TYPICAL SAMOANS

The lightest of their race in color, the Samoans are true Polynesians, prepossessing in appearance and manner, and of splendid physique. The men treat their women with great respect and kindness and lavish affection upon their children. They are scrupulously clean, bathing at least twice a day.

Britain, France,* and Germany. Japan at that time had but small interests, as occupant of the Bonin (Ogasawara) Islands, a small group of about 38 square miles in extent.

In area and population the United States possessions certainly rank first in importance, the comparatively large territories of the Philippines and the Hawaiian Islands, with American Samoa and Guam, giving that country premier place among the great powers interested in the Pacific.

The possessions formerly held by Germany in the Pacific were: Kaiser Wilhelm's Land—area, 70,135 square miles, population, 110,000; Bismarck Archipelago and a part of the Solomon group—area, 22,046 square miles, population, 210,000; Caroline Islands—area, 598 square miles, population, 30,900; Mariana Islands—area, 241 square miles, population, 1,118 (exclusive of Guam); Marshall Islands—area, 156 square miles, population, 10,000; German Samoa—area, 993 square miles, population, 37,000.

It will thus be seen that, with widely scattered territories aggregating 94,169 square miles, stretching diagonally across the Pacific from Samoa on the southeast to the Mariana Islands on the northwest, for a distance of over 3,300 miles and parallel to the seaboard of northeast Australia, Germany held the key to the Western Pacific.

ISLANDS SUITABLE FOR NAVAL BASES

On each of these groups enumerated a naval base could be established and its position rendered secure against attack by suitable fortifications and the natural advantages afforded by the coral-reef structures.

Once this was done, a hostile power would be in a position practically to dominate the whole of the Pacific Ocean. With submarines and a fleet of destroyers,

* For an account of the Marquesas Islands, owned by France, see "A Vanishing People of the South Seas," by John W. Church, in the October, 1919, number of the NATIONAL GEOGRAPHIC MAGAZINE.

XUM

Photograph from Dr. J. P. Thomson

THE GRAVE OF ROBERT LOUIS STEVENSON, ON OPOLU, SAMOAN ISLANDS

On the summit of Mount Vaea a cemented monument, in accordance with native design, has been erected, by native labor, over the grave of Robert Louis Stevenson. On the side facing the east are carved his own words:

"Under the wide and starry sky,
Dig the grave and let me lie,
Glad did I live and gladly die,
And I laid me down with a will.

"This be the verse you grave for me:
Here he lies where he longed to be;
Home is the sailor, home from sea,
And the hunter home from the hill."

Chiseled on the tomb are a thistle and a hibiscus flower, typical of his countries.

it would be a simple matter to isolate Australia and New Zealand, as the enormous oil supply of Sumatra, the coals of Australia, and the inexhaustible food resources of the Pacific islands would obviate the necessity of leaving the locality for supplies of any kind. And from such a position it would be equally effective in blocking the Panama Canal, in interrupting communication across the Indian Ocean, invading the East Indies, the Philippines, and menacing Japan.

CONTROL OF THE ISLANDS REDISTRIBUTED

In point of fact, there is no other region on the globe possessing such remarkable natural facilities for the dominating purposes of an ambitious and aggressive power.

As an outcome of the defeat of the Central Powers and the distribution at Paris of the control of enemy colonial possessions, the Australian Mandate gives to that commonwealth complete control over Germany's former Pacific territories, with the exception of Samoa, the Marshall, Caroline, and Mariana Islands, and the phosphate deposits of Nauru, the ownership of the last named being shared with Great Britain and New Zealand.

German Samoa was placed under a New Zealand mandate.

The Japanese hold the Marshall, the Mariana (except Guam), and the Caroline Islands under the Peace Conference mandate, and have lost no time in getting a firm footing, not only there, but in other groups of the Pacific, for the purpose of trade.

There is a monthly service of steamers between Japan and the Marshall Islands, and Japanese goods are being distributed among the islanders in all the groups of the Pacific.

NAURU, THE RICHEST ISLAND IN THE SOUTH SEAS

By Rosamond Dobson Rhone

THE mandates for the Pacific islands which formerly belonged to Germany were assigned to the powers who seized them in the first year of the war: to Japan, the German islands north of the Equator; to New Zealand, German Samoa; to Australia, German New Guinea, the German Solomons; to Great Britain, the island of Nauru. There have been doubts expressed as to whether these mandates are not proving to their holders more of a burden than an asset, but Nauru is probably the richest spot on the globe for its size.

This is a story of the island whose name has risen to notice in the new geographies, as a by-product of the upheaval caused by the World War, just as, owing to some geological upheaval ages ago, the island itself arose from the sea.

GERMANY CAME LATE INTO THE PACIFIC

This story of Nauru under white control is the story of German possessions in the South Seas. Germany came late into the Pacific; all the good things had been taken. The explorers — Dutch, British, French, and Spanish—had pretty well divided up the islands, for in their day "findings were keepings."

The German colonial policy was undertaken in 1883 by financing certain chartered companies which had been trading with the islands for about 25 years. By this means Germany acquired a protectorate over a part of northern New Guinea. A protectorate is the camel's nose in the tent. When he gets his head in and his hump, it becomes a colony.

New Guinea is shaped like a dragon, with a Dutch head and shoulders, British underparts and tail, and German back and rump. Perhaps, from the German colonial point of view, their portion was the saddle, in which they would override the entire Pacific.

In 1886 an agreement between Great Britain and Germany, defining the "Limit of spheres of influence in the Western Pacific," was signed at Berlin. This was the camel's head and hump. By this all lands unappropriated by other powers were divided between the two contracting parties. It was something like the division of the earth between Abram and Lot—one took the East and the other the West. In this case Great Britain took the East and Germany the West.

The language of the deed is not like the language of deeds of land; there are no corners and boundaries of adjacent properties; no "lands, tenements, and hereditaments"; but the terminology of navigation is drawn upon to furnish the descriptions.

The division line starts on land, but at once puts out to sea. It begins at a point on the northeast coast of New Guinea on the boundary line between British and German territory, thence east along a parallel of latitude to a point in the Pacific Ocean marked on a British admiralty chart, thence from point to point on admiralty charts to a point fifteen degrees north latitude and 173° 30′ east longitude.

GERMANY PURCHASED ISLANDS FROM SPAIN

This line of cleavage gave to Germany the Marshall group, a large number of islands north of New Guinea, rechristened the Bismarck Archipelago, some of the Solomon Islands, and a small coral island almost under the Equator, which is Nauru.

Three years later Germany added to her Pacific holdings by buying from Spain the Caroline group west of the Marshalls, and the Ladrones, with the exception of Guam, which had been previously acquired by the United States as a by-product of the Spanish-American War.

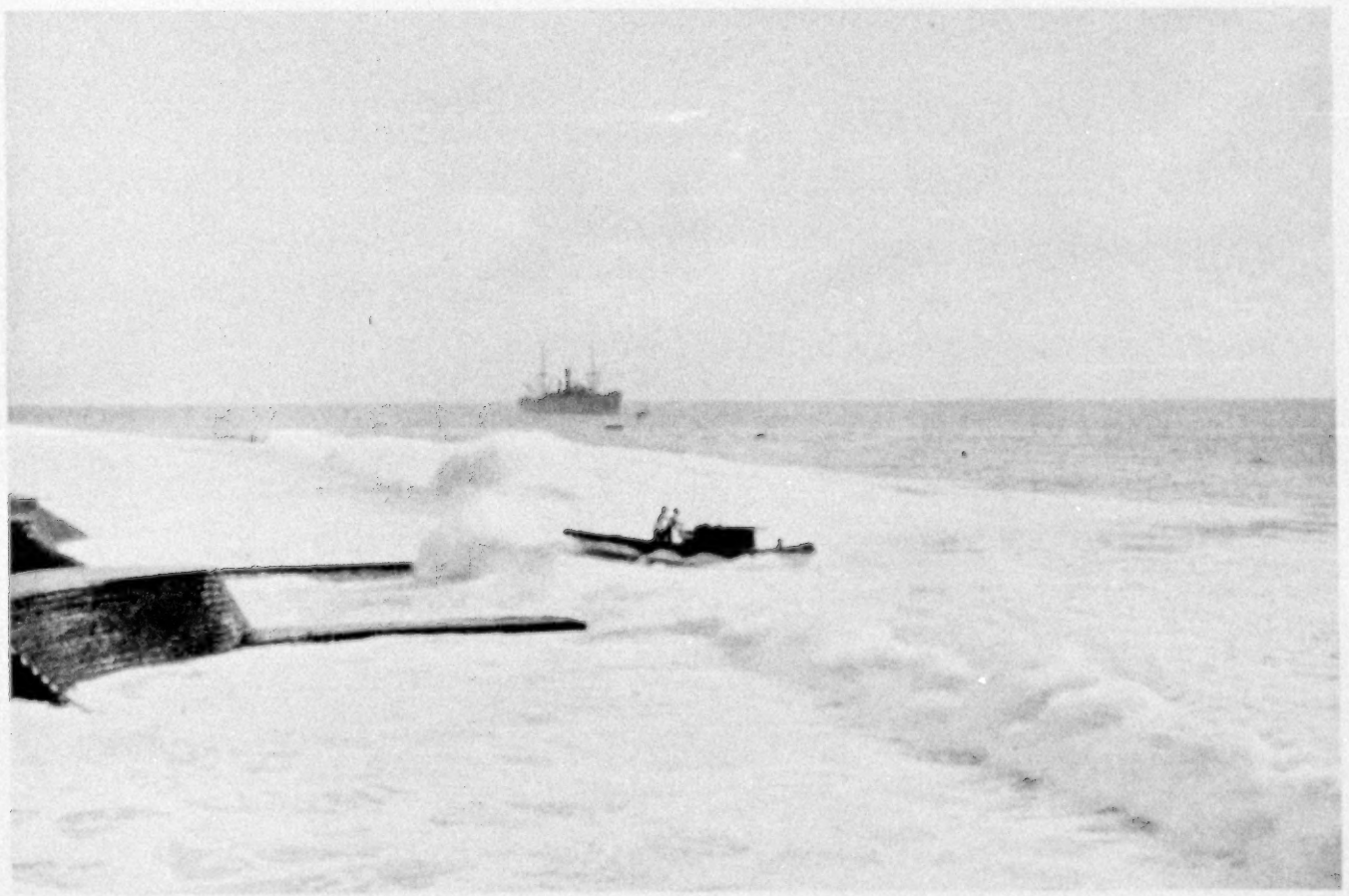
About the same time, she acquired by agreement with Great Britain and America (ceding to the former part of the Solomon group) two islands in the Sa-

XUM

Photograph from Mrs. Rosamond Dodson Rhone

A SOCIAL LEADER OF NAURU IN COSTUME FOR THE CELEBRATED FISH DANCE

The "Dance of the Fish" must be a joyous one for its participants. The finny decorations range in color from rainbow to scarlet, blue, yellow, black, and green, and are eaten when the dance is finished.



Photograph from Mrs. Rosamond Dodson Rhone

OBVIATING THE DIFFICULTY OF HARBOR NAVIGATION AT NAURU

Because of the coral reef, which slopes beneath the sea at an angle of 45 degrees off Nauru, the phosphate company has provided deep-sea moorings. Large buoys lie on the surface of the sea at a safe distance outside the edge of the reef, while small ones are lined close to it. A motor launch operated by a native engineer is seen leaving the small-boat harbor and crossing the reef through the surf at high tide (see text, page 573).

moan group, one of which was the last home of Robert Louis Stevenson and on whose summit is his tomb (see page 558).

In this way Germany acquired her island possessions; she held them for about thirty years; we all know how she lost them.

When Germany took possession of the islands she made Jaluit the seat of government for the Marshalls and assigned Nauru to that group, although it was an island altogether *on its own*, as the British say, having its own language and customs and lying 300 miles distant. There is no physical likeness, as it is an upheaved coral island, while the Marshalls are low-lying atolls.

AT THE "JUMPING-OFF PLACE" OF THE WORLD

Nauru, or Pleasant Island, is almost at the jumping-off place of the world; it is not exactly "East of the sun and west of the moon," but it is almost the farthest east, being only thirteen degrees west of the international date line, and it is a half degree south of the Equator. It is one of the *Line* islands.

Before it fell to Germany it knew no white rulers, but was governed by its own immemorial laws, enforced by its own chiefs; but white influence had impinged upon it for many years. Whaling ships from New England ports called there and traded firearms for drinking coconuts and island pigs. It was rather a poor island in those far-off days, before its great wealth was discovered. It had no sandalwood or tortoise shell; no pearls or *bêche-de-mer;* not even copra, for copra was not made in the Pacific before 1872 and coconut oil was not an article of commerce.

There are on Nauru two monuments to contact with American whalers. One is of flesh and blood—a native family whose curly hair is in striking contrast to their straight-haired neighbors, witnessing that the ancestor was a runaway negro sailor. The other is a small can-

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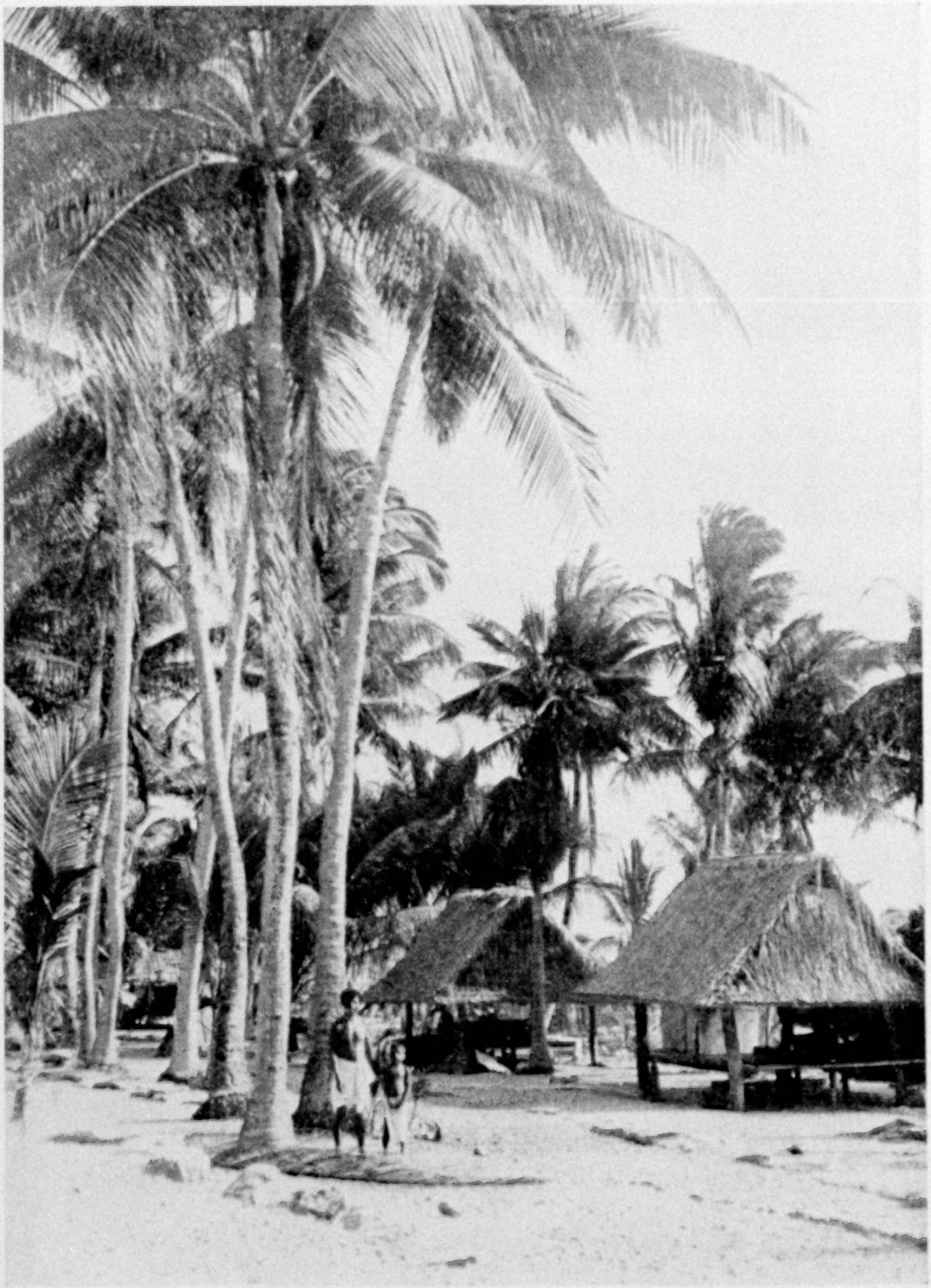


Photograph from Mrs. Rosamond Dodson Rhone

NAURU ARCHITECTURE

The houses built on piles are usually smaller than those built on the ground. The former, about 22 feet in length and 15 feet in width, are supported on a framework of stout poles fastened to the top of the piles by broad strips of rattan. The ground houses average 30 feet in length by 20 feet in width.

Photograph from Mrs. Rosamond Dodson Rhone

A PHOSPHATE TRAMWAY

This electric tram line is used to haul phosphate to the piers, where it is shot into the surf-boats to be carried to the cargo vessel. In Australia, where some 200,000 tons of this fertilizer are used each year, phosphate has doubled the wheat crop.

non, which stands before the house of the British administrator.

THE ISLANDERS' REVENGE

In the fifties, a whaling ship out of New Bedford, Massachusetts, called at the island, and the natives paddled out in their outrigger canoes and swarmed over the decks, examining everything with lively curiosity. They especially admired a small cannon, whose polished brass glittered in the tropic sunshine, and they offered to buy it, paying for it with coconuts. A price was agreed upon. They went ashore and returned with the required number, but the captain raised the price, asking double the number.

The natives again went ashore and brought back the stipulated number; the captain again raised the price. It was now late in the day and the natives said they would bring the remainder in the morning. They beached their canoes and retired to their huts, while the crew, drinking the delicious coconut milk and feasting on the delicate meat, no doubt felicitated themselves, as the ship drifted about waiting for the dawn, on their cleverness in outwitting the simple savages.

In the night the natives went out in force, surprised and overcame the officers and crew, and killed every man save one sailor who secreted himself. They set fire to the ship and took the cannon; they took nothing else!

Other white influences were traders who took native wives, and the traditional "beach-combers"—runaway sailors, sometimes escaped convicts, and white men "gone native," who lived in native huts upon native food.

There were also more benign influences. French Catholic missions and English and American Protestant ones were established. The island became nominally Christian, but without abandoning the combats between the tribes.

The Nauruans have never been cannibals, but they had the reputation of being savage warriors. A traveler from New Zealand—not Macaulay's New Zea-

Photograph from Mrs. Rosamond Dodson Rhone

COÖPERATION IN CANOE-MAKING

All the men turn out on Nauru for canoe-making. The felled tree is dragged to the beach, where it is trimmed and barked, to the accompaniment of shouting and singing. It is floated to the village and beached; then the experienced canoe-maker hollows and shapes it with a stone adze.

lander standing on a broken arch of London Bridge—who visited the island just before the Germans took possession, found the natives all armed and involved in deadly feuds. He counted nine kinds of rifles of English and American make, besides several cannon. There were then ten white traders living near each other along the beach and some of their half-caste descendants are there today.

When Germany took over the islands she gave the natives a certain number of days to give up their arms. They generally obeyed, but a few threw theirs into the caves which underlie the island, where they are found from time to time by exploring parties.

GOOD ROADS CREDITED TO GERMANY

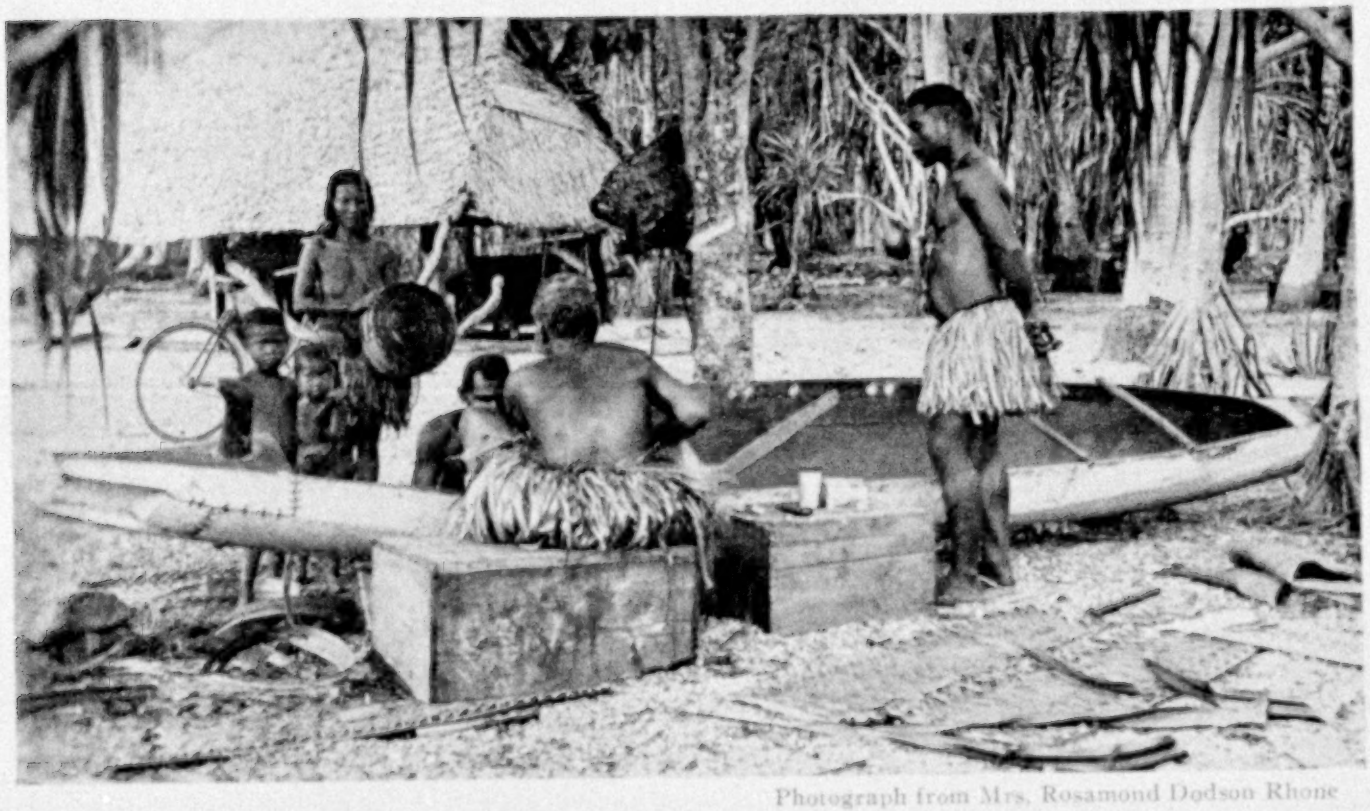
There are two things to the Germans' credit in the Pacific: They built roads and they taught the natives to make copra.

The native method of making coconut oil was to rely upon the sun's heat to extract it from the broken up or shredded meats, and to finish the process by putting the shredded coconut into a bag made of the canvas-like stipules of the coconut leaf and placing it under a clumsy press which was merely a timber, one end of which was thrust into a notch in a tree trunk, while upon the free end the weight of several persons was thrown.

This was work, and the South Sea islander does not take kindly to work. He has made coconut oil for his own use in this manner from the time "when the memory of man runneth not to the contrary," but he could not be persuaded to make it commercially.

Copra is easily made and stored. The meat of the ripe coconut is broken into pieces and dried in the sun just long enough to extract the moisture; then it is bagged and ready for sale.

In the South Seas copra is a magic word. For this the Pacific trader dares the malaria and savages of the Solomons and the New Hebrides, and the teeth of the coral reefs. The trade store and copra shed stand on the beach of every coral isle, and when a steamer or



Photograph from Mrs. Rosamond Dodson Rhone

SOLVING THE SHIP-TONNAGE PROBLEM IN NAURU

In the building of an outrigger canoe, one man is in charge and does most of the work, but timber for the outrigger and platforms must be provided by his assistants. Coconut sennit is used to fasten the timbers together. The woman in the background is holding a roll of pandanus strips used in basket-making and in weaving mats such as the ones in the foreground. The latter constitute the "weather boarding" for native houses.

schooner calls, the surf-boats go in and out, over the reef at high tide or through intricate channels when there is an open lagoon, carrying trade goods and returning with bags of copra.

The Germans promulgated laws, the chiefs being held responsible for their enforcement. Taxes were imposed—head tax, dog tax, and bicycle tax—and the men were required to work on the roads three days of each week.

THE STORY OF THE DISCOVERY OF PHOSPHATE

The colonial government did not know what a treasure they had under their feet, but were content to run a little trade store, a branch of the Jaluit store, which sold to the natives tobacco and beer, Alaska canned salmon, sugar, rice, and ship biscuits in exchange for copra. They also sold prints and thin Japanese silks for the Mother Hubbard dresses which the American missionaries taught the native women to wear and for the lava-lavas which the native men wore to the mission churches.

Then came a great change, owing to the discovery of phosphate.

One day Nauru, like Aphrodite, arose dripping from the sea. The date of this emergence cannot be more nearly indicated than *ages ago*, and the term *day* is not limited to twenty-four hours, but is to be construed liberally, like the *days* of Genesis. The island may indeed have been thrust suddenly into the air, with all her lovely ployps gasping and shriveling in the tropic sun, and scarlet fishes and long-armed octopi leaping affrighted out of the exposed caves to the safe shelter of the sea, while slow-moving sea-urchins and mollusks perished in the pot-holes and labyrinths of the coral; or the process of elevation may have been gradual, life in the coral dying gradually at the emerged top, while it remained in full vigor just beneath the level of low tide.

At any rate, when the upheaval was complete, when the fairy towers and pinnacles and the unsunned caverns of the sea had been lifted into the blaze of the sun, life at its base beneath the sea continued unabated and the fringing reef was slowly extended around it.

At this period the island must have looked like those fantastic artificial structures which we see in aquariums. No

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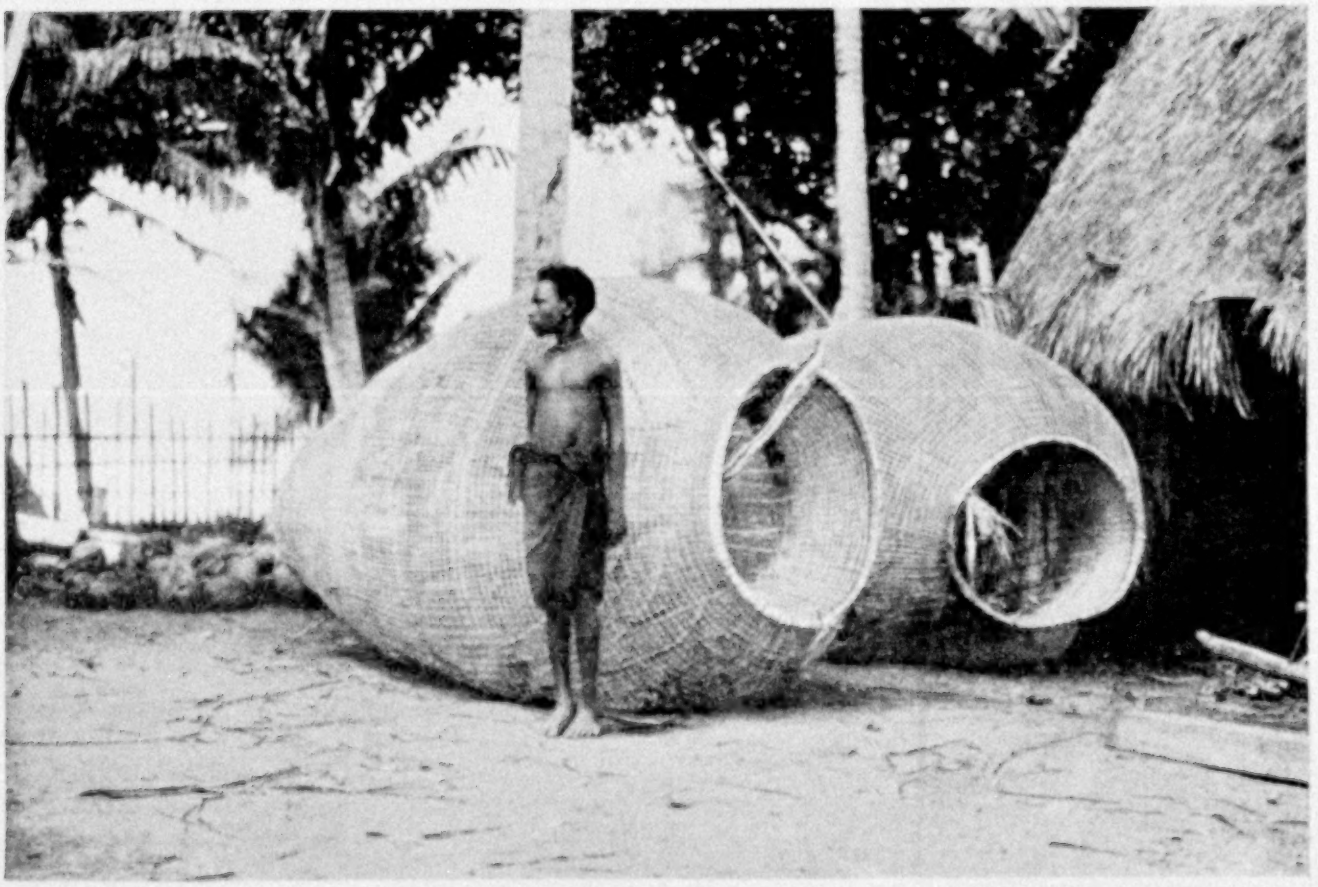


Photograph by A. Nielen

THE TACKLE OF THE SWAMP FISHER OF THE SOUTH PACIFIC

Rattan is used in the making of these fish traps. They are five or more feet high and are set in swamps, especially in New Guinea. The fisherman roasts his catch in a covering of cane and bamboo.

product of man's construction could be more extravagant in conception than these pinnacles, towers, bridges, flying buttresses, their shapes always suggesting architectural fantasies upreared into the air. There it stood, bare and bald as did the earth on that day in Genesis when the dry land first appeared.

THE SEA-BIRDS BRING WEALTH

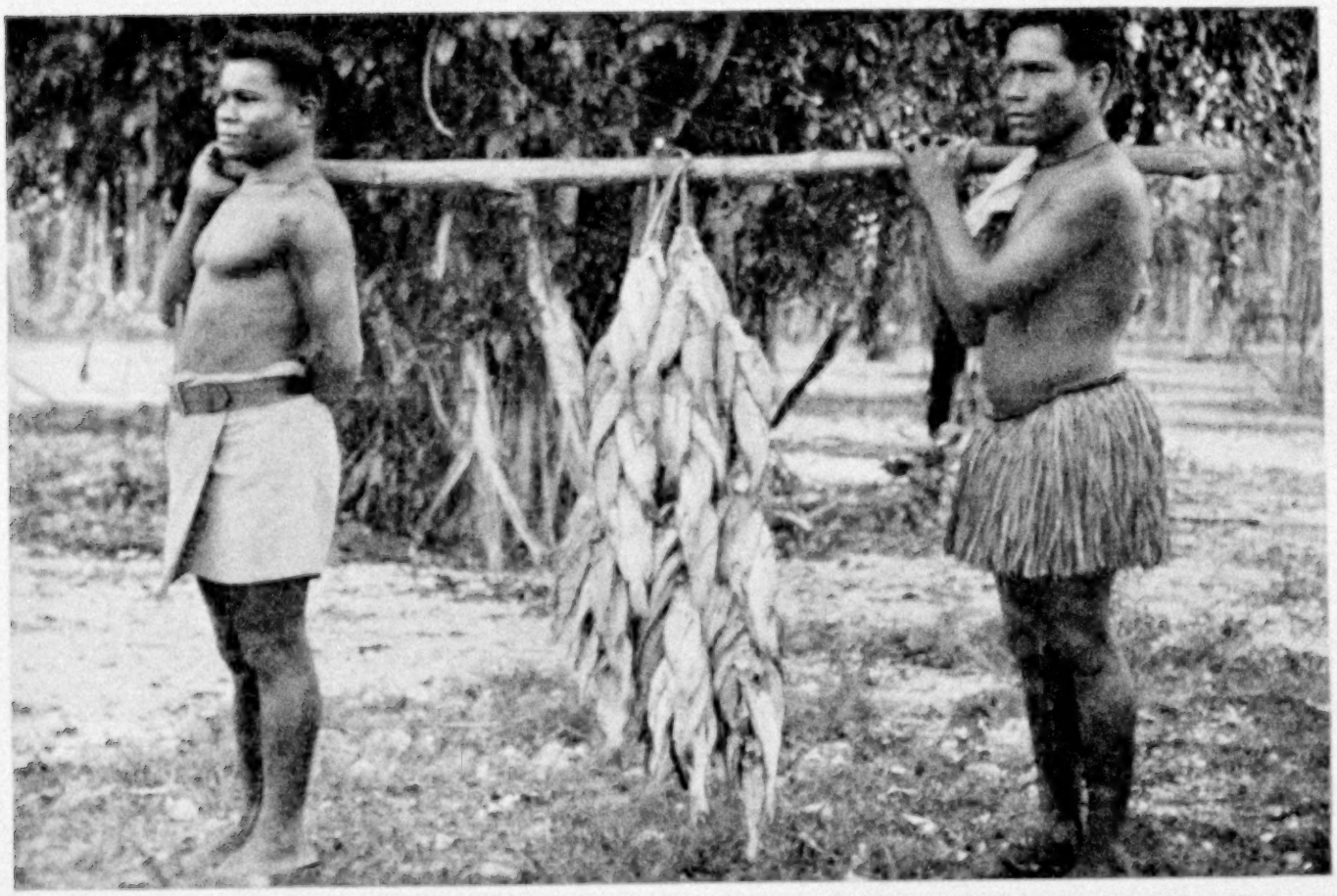
Then came the sea-birds, millions and millions of them, feeding on the abundant sea-food, nesting in the coral, hatching their young in ever-increasing multitudes, and depositing the waste of their bodies in the coral till the lower crevices were filled and a gradually rising body of guano attained at length a level with the tops of the pinnacles, and then rose above them and lay in a level plateau across the island.*

On the margin the rains, the winds, and the breakers, spouting high against the coral, washed away this deposit, so that ramparts of bare pinnacles stood up and still stand all around the island; but the coral walls back from the shore held safe the treasure. Came another day (I am aware that I am flinging *days* about as casually as the author of Genesis). The sea-birds were gone; not a keen red eye or swift-diving wing was left; gone, immemorially gone. How or why is a mystery.

Then in the alembic of Nature a transformation occurred. Guano is chiefly phosphoric acid and nitrogen; coral is chiefly lime. Somehow, by the close contact, the guano became changed into phosphate of lime, which is guano raised to the *n*th power. It had now become a hard rock, odorless and generally colorless, although some specimens show fine, dark stratification and take a high polish.

Another day—perhaps the same day—(it is startling to see how closely this follows the Genesis story of creation)—vegetation appeared, narrowly limited in species, but abundant in specimens; and finally man, the brown people of the South Sea. This must have been the

*See, also, "Peru's Wealth-Producing Birds," by R. E. Coker, in the NATIONAL GEOGRAPHIC MAGAZINE for June, 1920.



Photograph from Mrs. Rosamond Dodson Rhone

AN ILLUSTRATED FISH STORY

The most popular forms of fishing paraphernalia used on the island of Nauru are bows and arrows and spears. This catch of brilliantly colored fish seems to be a satisfactory one. The tree in the background is a banyan.

order, for where there is no vegetation there is no population.

The vegetation owed nothing to the wealth of phosphate beneath it. Phosphate is not soluble in water. It needs treatment with sulphuric acid, which converts it into superphosphate to let loose its treasure of stimulation for plants.

East of Nauru, 160 miles, lies Ocean Island, or Banaba, another island the story of whose origin is Nauru's story. Like twin sisters they stand unrelated to their nearest neighbors, the low-lying atolls, their only relative being the island of Makatea in the Tuamotu group (Paumotos), more than 2,000 miles distant, where the evolution of phosphate followed the same lines.

A DISCARDED DOOR-STOP PROVES CLUE TO FABULOUS WEALTH

A few years ago the Pacific Islands Company had schooners cruising in the Pacific for various tropical products, especially guano, which was growing so scarce that they were "brooming" it from tiny coral islands. One of the captains brought from Ocean Island to the Sydney office of the company a piece of curious stratified rock with the suggestion that it might be made into children's marbles. This rock remained knocking around the office for years, being used as a door-stop. Finally the manager of the company analyzed it and found to his amazement that it was 80 per cent phosphate of lime. He boarded the next schooner sailing for Ocean Island, which had fallen upon the eastern side of the line of demarkation and so became British territory.

The Pacific Islands Company was reorganized as the Pacific Phosphate Company. The British Colonial Government granted permission to buy land of the natives for opening quarries and building a plant with crushers, loading bins, and tramways, and before the war interfered with the shipping the annual output was 100,000 tons, worth when loaded on the ships $12.50 per ton.

As soon as the phosphate works were

Photograph from Mrs. Rosamond Dodson Rhone

A NAURU "TOPER"

After the coconut has attained full size, and long before it is ripe, it contains a pint or more of delicious juice, called in the different languages of the islands, wine, water, or milk, and what could be more refreshing in the blistering heat of the tropics than this cool drink, with its bit of a tang!

established upon Ocean Island, the company extended its operations to Nauru. Application was made to the German Government for a concession, which was granted on condition that the Germans were taken into partnership. A fine plant was built on the lines of that at Ocean Island. There was a British manager and a German manager, each with his own staff.

A white settlement was built, the Germans bringing knock-down houses from Germany, which were set up in rows and named "Berlin," "Stuttgart," "Cologne," while the British houses were named for British and colonial cities. Each house had a garden of flowers, the walks edged with white coral; in the German gardens the walks were bordered with inverted beer bottles.

A German governor was sent to the island. A two-story house was built for him (the only one on Nauru) and a full-length portrait of the Kaiser hung on its wall. The grounds were planted with beautiful tropical trees and shrubs, and the flag with the two-headed eagle was hoisted on a tall pole on the beach.

On the hilltop was erected one of those fine wireless stations which Germany placed at each of her strategic points in the Pacific. This was a triangular mast of structural steel 420 feet high, resting upon glass disks and guyed to mas-

sive concrete pillars. *Then came the war!* How many stories of fact and fiction contain these words—*then came the war.*

"UNDER TWO FLAGS"

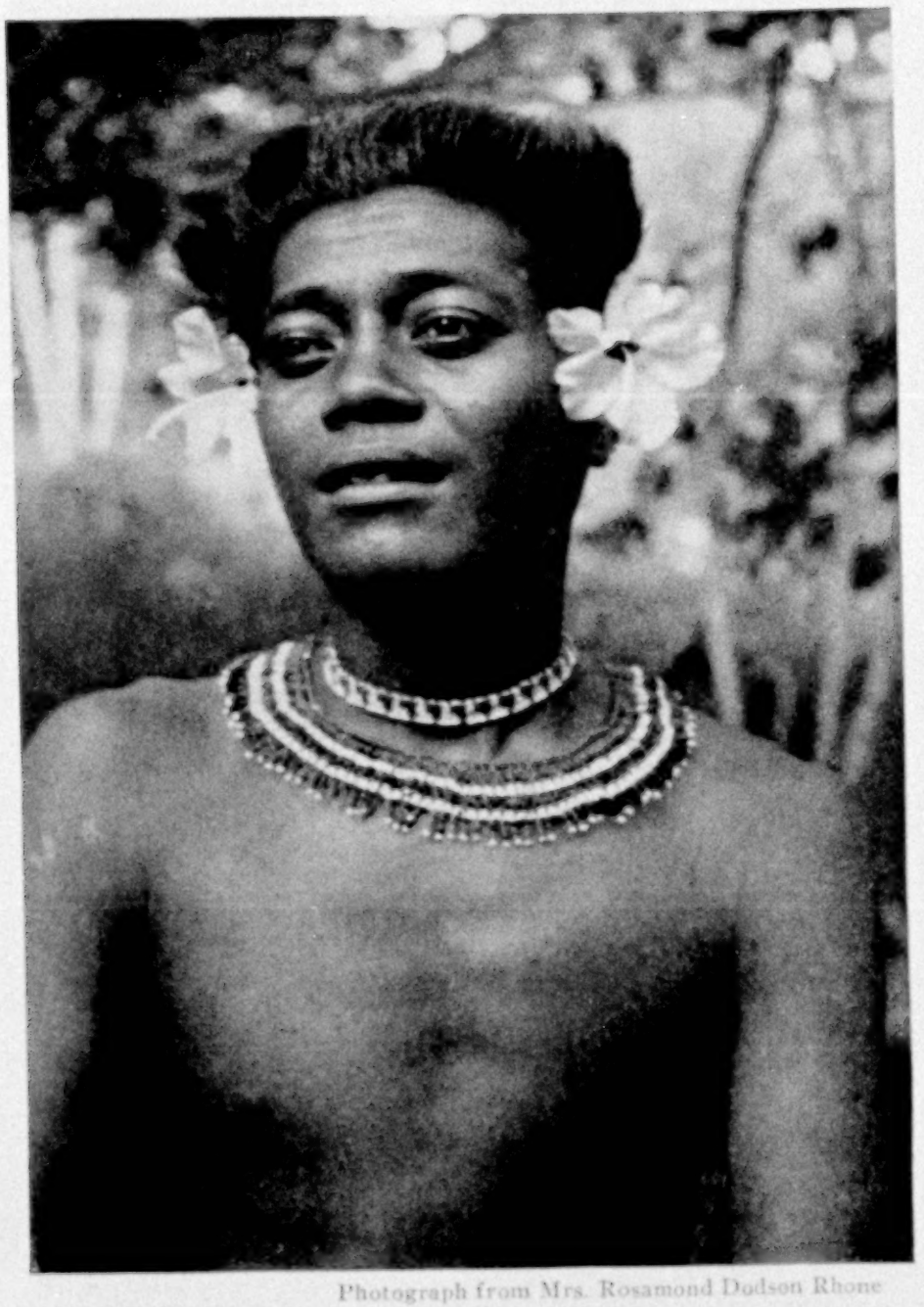
After the Australian navy had put an end to the spectacular career of the *Emden,* it reached out to strike the enemy in other places. German New Guinea was captured, and then a warship was sent to Nauru. The flag of the two-headed eagle was hauled down and the flag of the Crosses of Saint George, Saint Andrew, and Saint Patrick was hoisted. The German residents agreed to submit to British control. Then the warship steamed away. It was no sooner out of sight than the Germans, who had thrown their arms and ammunition over the reef upon her first appearance, broke their parole and hoisted their flag.

The next day a Japanese man-of-war, fresh from conquest of the Carolines and Ladrones, was sighted by the look-out on top of the wireless mast. The British flag was again hoisted and the warship steamed past without calling. A few days later the British flag was burned in a spectacular manner on the sports ground, after which the governor ordered all British subjects to go aboard a small cargo ship for deportation to Ocean Island.

These exiles, including women and children, about forty in number, reached Ocean Island the next day and were assigned homes with the company staff there. Ocean Island had no wireless at that time, so it was two months before the news could be sent to Rabaul, in New Guinea, the nearest point of military occupation, and measures taken to turn the tables upon the Germans.

A ship was sent, with officers and soldiers and a machine-gun. It called first at Ocean Island and took on board the deportees, who were carried back to Nauru. The Germans were arrested and deported to Sydney, where they were interned during the war and then sent to Germany. Their native wives and half-caste children remained on Nauru.

An Australian garrison was left, pending the duration of the war. A British administrator took the place of the German governor, and King George the Fifth



Photograph from Mrs. Rosamond Dodson Rhone

A BROWN-SKIN BEAU BRUMMELL

The men of the Solomon Islands, rather than the women, are clothed as "the lilies of the fields." They are particularly fond of wearing the brilliantly colored hibiscus in their hair.

Photograph from Mrs. Rosamond Dodson Rhone

A SOUTH SEA KING AND HIS LOYAL SUBJECTS

Before Nauru fell to Germany, it knew no white rulers, but was governed by its own immemorial laws, enforced by its own chiefs. King Aweida, he of the top hat, is surrounded by his subjects.

looks down from the wall today where Kaiser Wilhelm used to scowl behind his mustache.

A DOG REVEALS HIDDEN RADIO EQUIPMENT

An Australian wireless staff took over the plant on the hilltop and adopted a little dog left over from the German occupation. Whenever the members approached a certain pile of coral blocks on the rocky hill near the station the dog became excited, barking and attempting to dig, as if something were hidden beneath it. Upon investigation they uncovered the mouth of a natural shaft in the coral, at the foot of which caves opened. In one of these they discovered a quantity of material belonging to the wireless plant, which had been secreted by the Germans. The dog was named "Radio."

The German impress on the South Seas is not great. They left some fine wireless stations, some fine government residences, some botanical gardens; they left good roads. They left no colonies to speak of and their language made no impression.

One New Guinea governor stated that if during his tenure of office he was successful in teaching the natives to speak good German instead of English he would be doing good work, but this failed and all officials were obliged to give orders in pidgin English.

The German flag which was hauled down on Nauru was shown to me at Ocean Island spread out upon the veranda of the British residency by the commissioner of the Gilbert and Ellice Colony, to which the island belongs. He said (this was during the war): "I wonder if this flag will ever again float in the Pacific."

NAURU UNDER BRITISH CONTROL

Nauru has about twelve hundred natives. Early in 1918 the chiefs, who had been under German rule for twenty-eight years before the war and under British rule pending the war, came to the administrator and asked him to send a petition to King George the Fifth to keep the island and not let it be returned to Germany.

The administrator thereupon summoned all the natives, men and women, to appear before him and declare themselves British or German subjects. This

Photograph from Mrs. Rosamond Dodson Rhone

TEACHERS AND PUPILS OF A MISSIONARY NATIVE SCHOOL

was the first plebiscite growing out of the war, and it took place in what was perhaps the most remote territory in the world. It suggested that day in the Old Testament when Joshua called all the tribes of Israel to Shechem and said to them: "Choose you this day whom ye will serve!"

This was a great day for Nauru. Perhaps the crowd that gathered in Shechem on that far-off day was no more weird and picturesque in appearance than those who came together on this little coral island.

As upon a festal day, the natives crowned themselves with fresh wreaths of flowers, and those who were nearest to the white settlement or under missionary influence put on "plenty clothes," the men wearing clean lava-lavas falling to the knee and the women Mother Hubbard dresses reaching to their bare heels, while those from more remote parts of the island, or avowedly pagan, came dressed only in *ridis* of pandanus leaves, swinging from their hips like ballet dancers' skirts, their bare brown torsos glistening with coconut oil.

They came on foot, on bicycles—a native in a *ridi*, riding a bicycle is a delightful anachronism,—some of the aged and feeble were drawn in light carts by man (or woman) power. Perhaps the most picturesque figure in that company was an old man named Tekoroa, dressed in a mat wrapped about his waist and reaching to his knees, encasing him tightly, like an envelope. Before there was a white government he killed seven men, natives, cast upon the beach by the waves, in order to seize their canoe.

They assembled at the government court-house, which is built like a native house, a high, wide shed supported by posts of coconut timbers, roofed by a deeply eaved thatch of pandanus leaves and floored by coarse coconut mats. Guided by the native police, they passed in line before the administrator's desk and subscribed themselves, without exception, British subjects. They can all read and write in their own language, for the missionaries have spread education throughout the islands.

MINING AND SHIPPING OF PHOSPHATE

Phosphate is mined by Chinese coolies in open quarries, but these are not like stone quarries, where everything is taken out as the work progresses. The phosphate is packed between the coral pinnacles as tightly as the filling in a tooth and

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Photograph from Mrs. Rosamond Dodson Rhone

THIS IS THE LIFE IN NAURU

Not the least of this island's attractions are the many beautiful lagoons into which coral rock pinnacles and coconut palms throw sharp reflections.

must be excavated, leaving the pinnacles standing.

There is, perhaps, no hotter working place on earth, for as the workmen descend, digging and blasting, they are below the level of the trade wind's cool breath and exposed to the fierce rays of the tropic sun.

When a coolie has filled a pair of baskets he hangs one on each end of a carrying-pole and makes his way by devious paths through the worked-out places to a central carrier, called the "flying fox," running on a cable. He dumps his baskets and trots back for another load, while the carrier conveys the phosphate to a hopper, a tall wooden tower with chutes, from which it is dropped into cars ready to take it to the dryers, huge buildings containing crushing and drying machinery and storage bins for the finished product.

A worked-out phosphate field is a dismal, ghastly tract of land, with its thousands of upstanding white coral pinnacles from ten to thirty feet high, its cavernous depths littered with broken coral, abandoned tram tracks, discarded phosphate baskets, and rusted American kerosene tins. Yet, in this waste, vegetation begins and young pandanus trees and sprouting coconuts are opening vigorous leaves and sending strong roots downward into the crevices of the coral.

To get an adequate idea of the expense and difficulty of equipping and maintaining the phosphate works, which include the maintenance of the employees, one must understand that the islands furnish nothing except coral rock and sand for rock and concrete foundations, and a little fruit and an abundance of fish for food. On Ocean Island even the use of sand is prohibited by the government, as there is very little sandy beach, the island being edged by vertical cliffs of coral. With this exception, whatever I say of Nauru is equally true of Ocean Island.

Even fresh water is lacking and must be provided by catchment areas for rainwater, the iron roofs of buildings serving this purpose, with galvanized iron tanks and concrete cisterns for storage, while

Photograph from Mrs. Rosamond Dodson Rhone

BUADA LAGOON, SHELTERED BY ONE OF NAURU'S COCONUT GROVES

The fish-pond partition in this lagoon is used by the natives as their live storage chamber for fish brought from the sea. It is covered with palm leaves.

sea water is used in the sewerage system and for the fire department. In case of lack of rainfall, and the Line islands are subject to severe droughts, fresh water is furnished by condensing sea water.

NO HARBOR IN NAURU

Every bit of wood, steel and brick for building and furnishing, every piece of machinery, all articles of clothing and food, are brought over 2,000 miles in ships from Australia. To the ordinary hazards of ocean cargoes is added the difficulty of unloading from rolling ships into tossing surf-boats. Sometimes the stevedore's gang misses the boat and drops a bulky piece of cargo, such as a piano, into the sea, when, even if it is salvaged, it retains a salt-sea tang on its wires.

There are low islands, atolls, that have practically no leeward side, but are all windward—that is, the winds blow right over them, and the sea on all sides is agitated so violently that it is not possible to land anywhere on their shores; there are others which have lagoons with one side open to the sea, through which ships can pass into safe harbors.

Nauru has no harbor, no anchorage, but she has a leeward shore, the western side, where, for the greater part of the year, ships can lie "off and on" sheltered by the bulk of the island from the winds which beat incessantly upon the windward side.

Formerly ships were obliged to lie "off and on," and some of them came too far *on* and were wrecked on the reef, but now there are deep-sea moorings provided by the phosphate company. Huge buoys lie on the surface of the sea, at a safe distance outside the edge of the reef, anchored far down beneath the surface and attached to the reef by "bridles"—chains bolted to the surface of the reef. The reef does not break off abruptly, but slopes beneath the sea at an angle of 45 degrees, so that 100 yards from the shore the water is 100 yards deep.

With infinite toil and patience these moorings are laid, as the mooring ship can work only in reasonably calm weather, and as soon as they are com-

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Photograph by J. W. Beattie

CATCHING RAIN-WATER FROM COCO-PALMS

Fresh water is scarce on the guano islands and must be provided by catchment areas for rain-water. When a coconut tree has a good bend in it, the natives wedge the butt end of a cocoanut leaf into the knee, which collects and diverts rain-water into a receptacle. Galvanized-iron tanks and concrete cisterns are also provided for storage.

plete the sea endeavors to tear them loose. "White horses" is not a far-fetched figure of speech for the crests forever hurdling the deep-green waves. Like wild stallions bitted and bridled, they tear at the steel "bridles" of the moorings and lash out with thrashing heels at the buoys, while beneath the surface the steel cables are gnawed by salt water, and polyps load them with their fairy palaces of living coral.

When all the difficulties of mining, crushing, and drying the phosphate have been overcome and the loaded cars have been run out upon the piers ready to shoot their loads into surf-boats, there may come a "westerly"—that is, the wind may change and blow toward the shore. Then the ships, which always have steam up and watches kept, as if at sea, loose their moorings and go out to sea, where they drift about, waiting for the wind to change.

One ship made a record by drifting for three months while waiting a chance to take on cargo, coming up to the island daily to signal. At length she ran out of coal and a collier came up from Sydney to supply her, but as it was impossible to tranship the coal on account of the violence of the sea, the ship, with the attendant collier, proceeded to a lagoon in the Carolines, where she filled her bunkers.

LABOR RECRUITED FROM DISTANT ISLANDS

The two classes of laborers, the workers in the phosphate field and the loading crews on the cars and boats, include few natives of Nauru. The former, as we have seen, are Chinese coolies, the latter Kanakas recruited from other islands. A Kanaka is a South Sea islander. The word is a general term meaning *man;* but no islander applies it to himself or to men of his own island. He uses it as a term of contempt.

Every two or three years a ship is sent among the Marshalls, Carolines, and Gilbert and Ellice groups to recruit laborers and to return the Kanakas whose terms have expired.

The recruited laborer hires himself to the "company" not on account of wages, but as a chance to travel, to see the world. He is assured of food and shelter and, if he has a wife and family, is given married quarters. He looks upon the wage as "velvet," to be spent on such luxuries as gay lava-lavas made in Manchester, England; for tobacco, sugar, canned salmon, jewsharps, and accordions.

He takes life lightly, hilariously, and gets much amusement out of his employment. Not for him the arduous labor of the phosphate field—none will undertake that but the plodding "China boy"—but the rush and roar of the steam and trolley phosphate trains, the pitching and tossing of the surf-boats under the end of the cantilever, whose long steel arm reaches beyond the edge of the reef, as the phosphate is shot down through a flexible canvas chute into huge baskets, amid clouds of dust, usually reaching its objective, but sometimes spilling into the sea to the accompaniment of shouts and laughter.

With singing, shouting, yelling, the string of surf-boats is pulled by a motor launch out to the ship, one man standing in the stern of each to handle the long steering oar, his brown body, clad only in a lava-lava, glistening with coconut oil and his head and shoulders powdered with white dust.

With more shouting and laughter the baskets are caught up by the derricks, swung on board and dumped into the hold, sometimes missing and dropping their contents into the sea amid renewed merriment. If anything goes wrong with the derricks and the men in the surf-boats, rising and falling with the waves, are threatened with danger from above, they dive overboard to the safety of the sea, like frogs on the edge of a pond plunking into the water.

Sometimes the wind changes so suddenly that the ship is obliged to put out to sea in haste, and the surf-boats are caught before they are able to reach shelter in the small artificial boat harbor and are either swamped or driven upon the reef and thence hauled up on the beach (see illustration, page 561).

THE RELATION BETWEEN THE NATIVES AND THE COCONUT TREES

Nauru is about seven and a half miles long and half as wide and is shaped like an oyster. It is bordered by the reef, which is bare at low tide, and inside of which is a beach of white coral sand. The beach above tide level is covered

Photograph from Mrs. Rosamond Dodson Rhone

THE ROAD OF HEART'S DESIRE

A road bordered with coral makes the twelve-mile circuit of the island of Nauru, following the beach for the entire distance. Only the tropics could afford the vision of beauty of a bright moon shining from a cloudless sky through the feathery fronds of the coco-palms.

with coconut palms, interspersed with pandanus and other trees and shrubs.

Back of the coconut plain rises a palisade of tall coral pinnacles whose summit is the phosphate plateau, which is covered by a forest of evergreen trees, the most common one being the tamanu (*Calophyllum inophyllum*), with handsome deep-green leaves, resembling laurel, and flowers like orange blossoms.

In the center of one end of the island is a small lagoon surrounded by a coconut grove. The broad plateau is uninhabited, as the natives live only under the coconut trees.

The tie between the South Sea islander and the coconut tree has been dwelt upon by travelers; in fact, in the Nauruan legends the coconut itself either owes its eyes and mouth to human ancestry or man owes his eyes and mouth to the coconut—the legend is hazy in outline. Certain it is that it is the most precious gift of the gods to the dwellers on the coral isles, and where it does not grow, there are no inhabitants.

The green nut furnishes drink and a delicate meat like the white of a soft-boiled egg. The ripe nut furnishes the copra of commerce, food for man either raw or grated and mixed with other foods, as well as food for fowls and pigs and fish bait. It provides oil for the hair and skin, an essential part of the native's toilet. The dried and polished shells make water bottles and oil flasks.

The fiber which surrounds the nut in the husk is twisted into cord, sennit, used for every purpose where cord or rope is needed, from binding together the rafters and posts of huts, the timbers of canoes and palings of fences, to tying sharks' teeth upon spear blades and making bird cages and fish-nets.

The sap dripping from the severed flower stalk is sweet toddy, which fermented becomes soma toddy, an intoxicant. The unopened leaves in the crown of the tree make a delicate white salad, the "sailors' cabbage" of the old whaling days. As this can only be obtained by killing the tree, white people call it

"millionaires' salad," owing to the valuation of trees.

The sheath at the base of the leaf (stipule) resembles a coarse sacking and is used for wrapping the grated meat in the crude oil press. The leaf makes an outside layer for the thatch, a coarse basket, broad coarse mats for the floor and for hanging on the weather side of huts. The midrib is used for fence palings and house walls. The dried leaves are bunched together and tied with green ones for torches. A strip of leaf bound around a tree trunk acts as a gutter for rain-water and a piece of leaf attached to the trunk in a certain way is a trespass notice.

The trunk of the tree is used for posts and rafters of huts, the shafts of spears, and dug-out canoes.

Photograph from Mrs. Rosamond Dodson Rhone

NATURE TRIUMPHANT AMID THE CORAL PINNACLES OF NAURU

A worked-out phosphate field is a dismal tract of land, with its thousands of upstanding white coral pinnacles from ten to thirty feet high. Yet, in this waste, vegetation begins and young pandanus trees and sprouting coconuts are here seen opening their vigorous leaves after having sent down strong shoots into the rock crevices.

WEALTH IS MEASURED BY COCONUT TREES

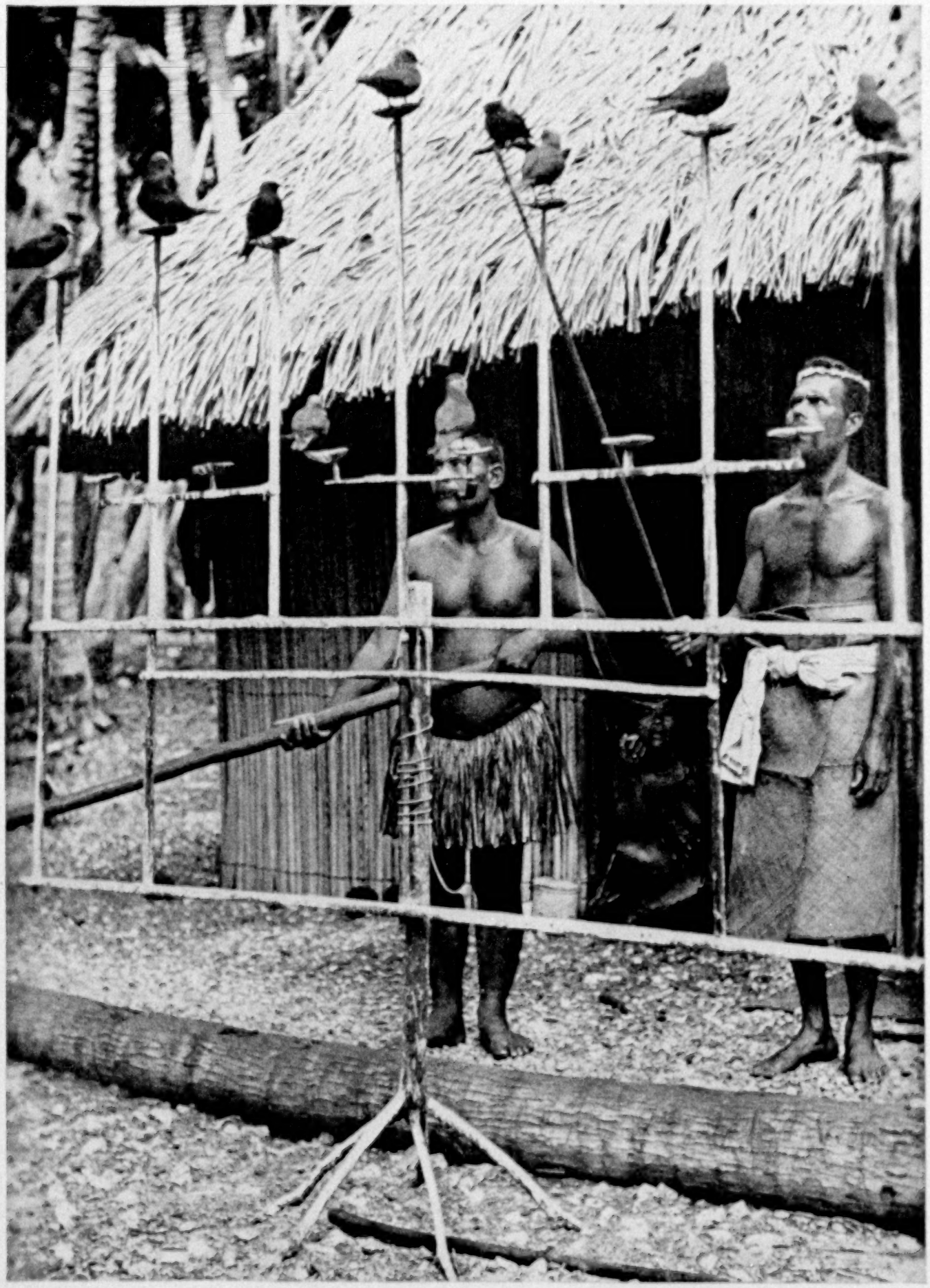
Wealth and rank are gauged by coconut trees. To own much coconut land is wealth and aristocracy; to own none is beggary; in the old time it was slavery. Some men have made a good thing, as reckoned in the islands, by marrying brown brides rich in coconut land.

The land is cut up into very small plots, usually described by square rods and roods instead of acres. The title to the trees does not pass with the land, but is a separate transaction. You may buy a piece of land, but cannot use the nuts, and the native owner has the right to come upon your premises to gather toddy and nuts.

The present valuation of the trees is from one pound sterling each for bearing trees to one shilling each for properly planted young trees. The first British administrator on Nauru did not know this, and when he cleared a piece of government land for a cricket ground by cutting down 80 trees, the native owners asked and were paid 80 pounds.

The trees are not only reckoned by count, but the nuts are reckoned by count. In normal times the crop is continuous, blossoms, green and ripe fruit being on the tree at the same time.

XUM



Photograph from Mrs. Rosamond Dodson Rhone

THE NAURU ISLANDERS ARE DEVOTED TO THEIR PET TERNS

Known as "noddies," these birds of sooty body plumage and gray heads, classed with the "booby" because of their unusual stupidity, are pets of the islanders. Their eggs are collected for food.

In time of drought the natives are not permitted to make copra, as the nuts are needed for their own food and for seed.

From 1914 to 1917 there was a great drought which killed thousands of trees. When the rains came and the trees blossomed, the natives asked permission to make copra. The administrator ordered a census of the ripe coconuts, and he went in person all over the island and verified the count. The natives count quickly, by tens. Each heap contained so many hundreds. He found the total barely sufficient to sustain the population until the new crop ripened, so forbade the making of copra.

THE PANDANUS TREE GROWS ON STILTS

The gods have given to the islanders another tree almost as valuable as the coconut and constantly associated with it. The screw pine, pandanus, is an extraordinary tree, dependent upon crutches and stilts. It starts in life as a stemless plant, closely resembling yucca, with sword-shaped leaves, each fitted on its edges and midrib with sharp spines. A little later it sends up a stout spiked trunk to about ten or fifteen feet, crowned with leaves like the radical leaves. It now resembles a huge mop.

Should the trunk be bent from the vertical, the tree drops from the top a cord with a bud at the end protected by a sheath; when it reaches the ground the sheath decays, the bud roots, and the stiffened cord becomes a crutch. A set of stout, bracing aërial roots is thrust out from the lower part of the trunk, the radical leaves decay and leave the tree standing upon stilts.

A straight horizontal branch is often thrust out at a height of two or three feet from the ground, sustained by roots set at an angle on each side, resembling a rustic bench, but any attempt to use it as a bench is speedily abandoned, as it is set with stout spines. The tree grows thus with stilted roots till it covers a large tract of ground.

Pandanus leaves are used for making *ridis*, fine mats and basket weaving, for thatching huts, for calking canoes, and for many other things for which coconut leaves are too coarse. The tree bears an orange-colored globular fruit, the size of a foot-ball and larger, separable into sections, which are chewed for the flavor, as it is composed of fiber and flavor only. It is also stewed and the juice made into a palatable black paste.

SCRAP IRON USED FOR FERTILIZER

The coconut tree being of such supreme importance to him, one would think the native would cherish it as his wife and child, but, on the contrary, he gives it no attention whatever, for it grows without care and lives to a great age. If he wishes to plant a tree, he picks out of the heap a sprouted nut, whose flattened triangular husk and opening leaf, standing at right angles to the long petiole, resemble the body and head of a duck, sets it into a shallow hole in company with a piece of old iron, and leaves it uncovered.

The proper planting of trees is done in the same way, except that the holes are wide and deep and placed at regular distances. Iron rust is beneficial to young trees. The nuts are not covered with earth for a year.

In 1897 a scientific expedition from Sydney landed on the island of Funafuti, in the Ellice group, in order to put down a bore to ascertain the depth of coral. This was to test the theory of the formation of atolls as announced by Darwin, who had said that it could be settled by a core from a depth of 500 to 600 feet.

There had been a British expedition at Funafuti the previous year, which had been abandoned on reaching a depth of 100 feet, owing to the breaking down of the machinery. The engineers had brought back a story of the difficulties in boring coral; that zones of extremely hard rock alternated with those of sand; that often the drill would strike a cave, where it would twine around in space and perhaps be lost in the depths.

It was with a good deal of trouble that money had been found for the second expedition. The government of New South Wales had furnished part, and private contributors the remainder, so that the little party felt that much depended upon their success. They began drilling and were only well started when a crown bevel-gear wheel broke and the boring stopped, as there was none to replace it. They stood around the drill in despair. There would be no ship calling for three months; there was no cable or wireless

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Photograph from Mrs. Rosamond Dodson Rhone

DEMONSTRATING ONE OF THE MANY USES OF THE COCONUT

Water-bottles and drinking-cups are made from the shell of the ripe coconut. The flesh is scooped out through the eye end of the nut and the outer skin ground off. Presto! a water-bottle, with a twist of leaves for the cork. Cups are polished with the nut oil and become ebony-colored with usage. The girl holds in her hand a coconut grater for making "anakiwi." She sits on the handle and works the coconut back and forth over the metal beak.

communication with the outside world; they were marooned on a tropic isle, whose discomforts and limitations they had discounted for science's sake, but which loomed in importance with the threatened failure of the expedition. A native stepped out of the crowd of curious islanders, whose bare bodies made a brown ring around the little group of white men, and, pointing to the broken wheel, addressed Professor David, the head of the party, in pidgin English:

"He no good?"

"No good!" was the reply, with a despondent shake of the head.

"One all saime belong me!" said the native.

"Belong you?" said Professor David in amazement. "What do you do with it?"

"Me plant him in coconut tree. You look see?"

The engineers did "look see," for the native dug up the twin of the broken wheel, which had been left behind with the discarded machinery of the previous expedition. It was put in place and the drilling went on. Mrs. David, who wrote what she calls "An Unscientific Account of a Scientific Expedition," has in her book a photograph of the "fertilizing wheel."

"A VEGETABLE GIRAFFE"

At first a coconut tree appears rather silly and inadequate. Mark Twain labeled it a feather duster on a long pole; Stevenson called it a vegetable giraffe, "so graceful, so ungainly."

We are so accustomed to think of a tree as having a solid vertical trunk, diminished regularly by branches, balanced and clothed with leaves, that a coconut palm hardly resembles a tree. It is bare to the top, tapering very slightly. I sometimes think of those sinuous trunks as ropes attached to captive balloons swaying in the wind. A fallen trunk ringed with the marks of decayed leaves looks like a great gray hawser; and yet this inadequate-appearing trunk suffices to sustain a tuft of leaves each ten and fifteen feet long and huge bunches of nuts eighty to one hundred feet in the air.

The coconut grove, seen from its edge, as one approaches from the sea, with its pale-gray slanting trunks and level tops, is without dignity and rather disappointing; but seen from within, the trunks be-

come light, graceful pillars, the feather dusters become a roof of green, rustling thatch, the deep shade is a grateful shelter from the tropic sun; or, looked down upon from a hilltop, the massed crowns, moved by the trade wind, flash in the sun like drawn swords. From beneath and from above, the grove is stately and dignified and when the moon gleams are flashed from the great fans the heart swells with rapture.

It is a pleasure to penetrate the slender-pillared aisles, to hear the trade wind clashing the leaves high overhead, to follow the numerous narrow footpaths printed by bare brown feet.

The grove is not a solitude, but is the dwelling-place of the brown people of the island. Their huts stand all through the wood, but the gray thatch and mat-hung walls so melt into the boles of the palms that they are unobtrusive, and the people walk so lightly on their bare feet that they make no sound. It is startling to catch a slight movement in the shadows and see a group of men making a canoe; or to gaze into one of the brown pools of brackish water and see looking up the brown face of one of the maidens who is taking a bath; or to see on the edge of the grove a line of brown figures, with *ridis* swinging from hips, and bunches of drinking coconuts and a huge fish swinging on poles between them, silhouetted against the crimson sky.

Photograph from Mrs. Rosamond Dodson Rhone

DEBUTANTES OF NAURU

The Nauruans are a handsome race, the women being accounted the best-formed of the Pacific Islanders. They are very friendly in their greetings to strangers. Their abbreviated *ridis* are made of pandanus leaves.

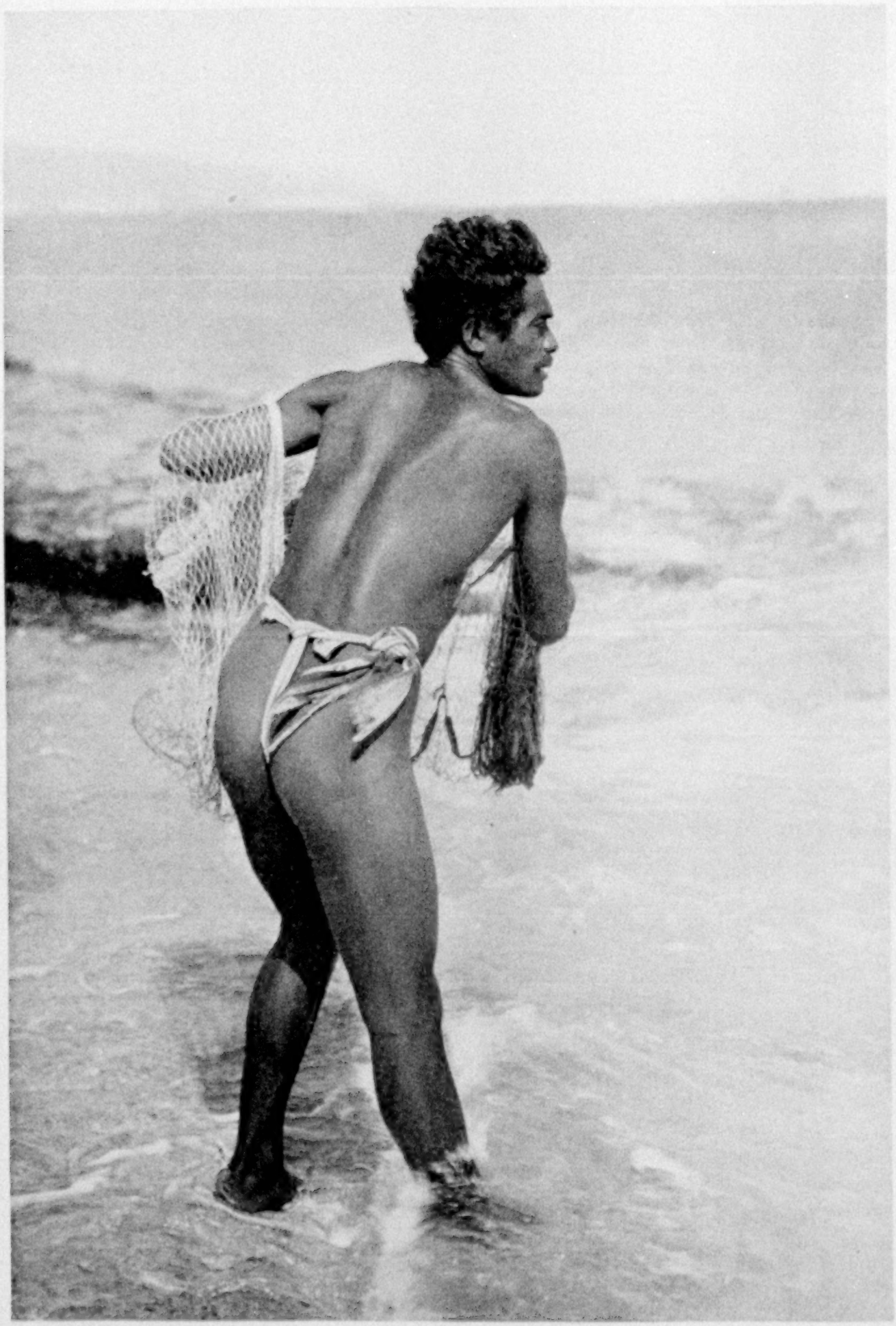
The huts are furnished with nothing at all. Sometimes the floor or part of it is a platform, raised three or four feet; usually it is the ground, strewn with broken coral, covered with mats, on which the dwellers sit by day and sleep at night. There may be a Chinese camphor-wood chest, a clock, a lantern, a bicycle; there are always bottles of coconut oil and coconut-shell water-bottles hanging under the eaves.

The yard is walled by a line of coral a few inches high, like the play-houses we built when we were children, and it is often surfaced with clean white coral shingle from the beach.

Close to the hut are the graves of the household, sometimes inclosed by palings, but often merely outlined by coral or inverted beer bottles.

CIVILIZATION AND CLOTHES BROUGHT DISEASE

The cooking is done on the ground, outside the hut, and is very casual, for much of the food is eaten raw; raw fish, raw shellfish, and raw coconut are staples. When food is cooked it is generally burned outside and half raw within.



Photograph by R. J. Baker

A TRITON OF THE PACIFIC

All through the Pacific islands the native races are dying out, owing to their contact with the white races. Many observers attribute their susceptibility to the diseases of civilization to the fact that they have begun to wear clothes (see text, page 583).

The native dress for both sexes is tasteful and becoming and suited to the climate. It is a full skirt made of narrow strips of pandanus reaching to the knees. A wreath of fresh flowers and a necklace of flowers or beads complete the costume. Sometimes the necklace is strung with shark's teeth and finished with a pair of frigate-bird feathers, which hang down the back.

The men often wear a belt, in which is thrust a huge, wicked-looking coconut knife.

Although these people are almost nude, they do not appear naked; the brown pigment clothes them, and they are as unconscious and poised as we in our clothing. They have well set-up figures and walk with the ease and grace of persons who have never worn corsets or shoes. They have fine teeth and straight, black hair, that of the men cut short, while the women wear theirs streaming down the back or hanging in braids.

Owing to the influence of civilization, they sometimes substitute for the exquisite wreaths of natural flowers the pink celluloid combs sold by the trade stores, and the men wear extraordinary earrings, such as safety-pins and matches.

In the "good old days"—every country has its "good old days," and in the South Sea islands these were the days before civilization impinged upon native customs—the natives anointed themselves frequently with coconut oil. After coming in from the fishing canoes, after violent exercise, and always before sleeping, they applied the oil freely. This safeguarded them from colds.

When they began to wear clothing they found that the oil stained their clothes, so they abandoned its use in great part.

All through the Pacific the native races are dying out, owing to their contact with the white races, whose diseases have proved extraordinarily fatal to them. So simple a disease as measles has almost destroyed the population of many islands. Tuberculosis is prevalent and Spanish influenza wrought great havoc.

Not the least cause of this is the wearing of clothing. The natives wear their clothes day and night. If they are wet by rain or by wading in the sea—I have seen them immersed to their shoulders while casting nets on the reef—they do not change, for in that climate they feel no sensation of cold, and even sleep in wet clothing, instead of oiling their bodies as formerly.

Many thoughtful observers hold that the influence of dress, especially the dress of women, has worked harm, for while the natives have learned to wear clothes, they have not learned how to wear them. Robert Louis Stevenson, who has much to say in praise of missionaries, says this about clothing:

"The mind of the female missionary tends to be continually busied about dress. She can be taught with extreme difficulty to think any costume decent but that to which she grew accustomed on Clapham Common, and to gratify this prejudice the native is put to useless expense, his mind is tainted with the morbidities of Europe, and his health is set in danger."

THE "MOTHER HUBBARD" IS ESPECIALLY UNSIGHTLY IN NAURU

The "Mother Hubbard" dress, the universal attire for women, is ugly, especially as worn in Nauru, reaching from throat to heels; in the Gilberts it is modified by being cut square in the neck and shortened to the knees. Fortunately, the missionaries stopped before they put hats and shoes on their converts.

A native woman does not feel herself modestly attired without the *ridi;* she often wears it under her dress, where you can see it bulge and hear it rustle. The missionaries devised a much more suitable dress for the men. The lava-lava, two yards of cotton cloth wound around the loins, tucked in at the waist and falling to or below the knees, and a white "singlet," a short-sleeved gauze undershirt, is simple and becoming. The *ridi* is frequently worn beneath the lava-lava for modesty's sake.

A large proportion of the Nauruans dress in purely native costume; others wear clothes to church or in the homes, where they are employed as servants, and change for *ridis* when they return to their homes; and yet others wear clothes without change till they fall into rags, or, as they say, "broken clothes."

The natives keep pigs, which run at large. "Captain Cook's pigs" they are

Photograph from Hugh M. Smith

NATIVE CRAFT WITH ITS SAIL TIED UP TO "SPILL" A TOO-FRESH BREEZE

One of the characteristic devices of this boat is the outrigger, a piece of wood sharpened at both ends and fixed parallel to the length of the boat, which stabilizes the craft and even permits open-sea sailing without materially decreasing its speed.

called throughout the Pacific, as he is supposed to have introduced their progenitors.

One of the governors ordered all pigs penned. The owners built pens and put the pigs inside, but neglected to give them food and water, as they had never been in the habit of giving them any care, and they began to die; so the order was rescinded. The pork is delicious, as the pigs are fed exclusively on coconuts.

The natives also keep peculiar-looking chickens. The roosters have small bodies and abnormally long legs, so that they appear to walk upon stilts, while the hens are very small and lay small brown eggs. If this is a case of reversion to type, the rooster being descended from some long-legged ancestor and the hen from some tiny one, and if the tendency continues, there will come a time when the rooster will stand so high on his stilted legs and the hen will be so small and so far below him that they will not see each other at all.

The natives do not eat eggs, and the hens rear their broods unhindered, unless the owner desires to "catch shillings" in the white settlement, when he gathers all eggs that have not actually hatched and offers them for sale.

Tame frigate-birds are kept on large roosts close to the beach, and a favorite

sport is catching the wild birds, using the tame ones as decoys; they are lassoed by a weight on the end of a fish-line. The children play a game in imitation of this, in which the bird is a pair of feathers weighted in the middle.

The birds which are not fully tamed are tied to the roost by long lines and are fed daily, just before sunset, with pieces of fish. The owner tosses the fish into the air and the birds swoop down and catch it. The native gives his pet water by squirting it out of his mouth, as the Chinese laundryman used to sprinkle clothes (see illustration, page 578).

FEW GODS IN THE ISLAND'S MYTHOLOGY

The native myths are not populous with gods, like those of richer lands. They say, in common with those of the other South Sea islands, that the sky originally lay flat upon the earth, and men wriggled beneath it prone upon their faces; when it lifted a little they went stooping; when it was finally hoisted to its place by the Spider, they stood upright. The first men were immortalized by being changed into coral pinnacles.

There appears to have been no organized priesthood, but an altar formerly stood before the hut of each chief, upon which were laid offerings of food, either devoted to gods, to the ghosts of their ancestors, or, what is more probable, to devils, in whom the natives have profound belief.

As late as 1889, a man-of-war called at the island and the sailors desecrated one of the altars by seizing the coconuts and other food upon it. The ship steamed away to Apia, in Samoa, was caught in the great cyclone on Saint Patrick's Day of that year, which destroyed most of the shipping in the harbor, including six warships, and was wrecked. The sacrilegious sailors were drowned. The Nauruans look upon this as a punishment by the spirits.

Some of these altars, which were coral pinnacles the height of a table and higher, are still standing, but are not used save as indications of the chiefs' houses. The government is substituting "chief posts" with the names of the chiefs inscribed.

The last of the witch doctors is still living, but the court has put an end to her practice. A native, whose abdomen was vastly distended by dropsy, sought her for relief. She took a woman's weapon, a short, stout handle with a head beaked with a shark's tooth, and ripped open the abdomen. The dropsy was cured, but the patient died, and the doctor was tried and convicted of murder and sentenced to life imprisonment in the house of the head chief, where she may be seen any day sitting on the mats in company with the chief's family.

AN ISLAND LYING IN LONELY SEAS

Nauru lies in lonely seas. There are three steamship routes between America and Australia, but the nearest one crosses the Equator about 1,400 miles to the east, on the way from Honolulu to Sydney; the steamship lanes across the Pacific from east to west lie about the same distance to the north; those from Sydney to Hongkong about as far to the southwest. Once in three months a small steamer plying between Sydney, the Solomon Islands, and the Gilbert Group, trading in copra and carrying a few passengers, touches at the island.

The mission ship, *John Williams*, carrying missionaries of the London Missionary Society to and from their stations throughout the Pacific, calls once or twice a year. The Pacific Phosphate Company's cargo boats, which come up from Australia every three or four weeks, are the main connection with the outside world. They carry mails, supplies, and a few passengers.

Time is not reckoned by the calendar, but by the arrival and departure of boats. The weather is never a topic of conversation, but the coming of the next boat is a vital subject.

TROPICAL HOUSEKEEPING

There are about 80 white residents. The greater number compose the "white staff" of the phosphate company—managers, clerical force, medical officers, engineers, overseers, and storekeepers. A garrison of a dozen men with a commissioned officer, a wireless staff, an occasional visiting missionary, the agent of the steamship company, whose boat calls four times a year, and the administrator, with his clerks, customs and post-office officials, make up the remainder.

Housekeeping has difficulties peculiar

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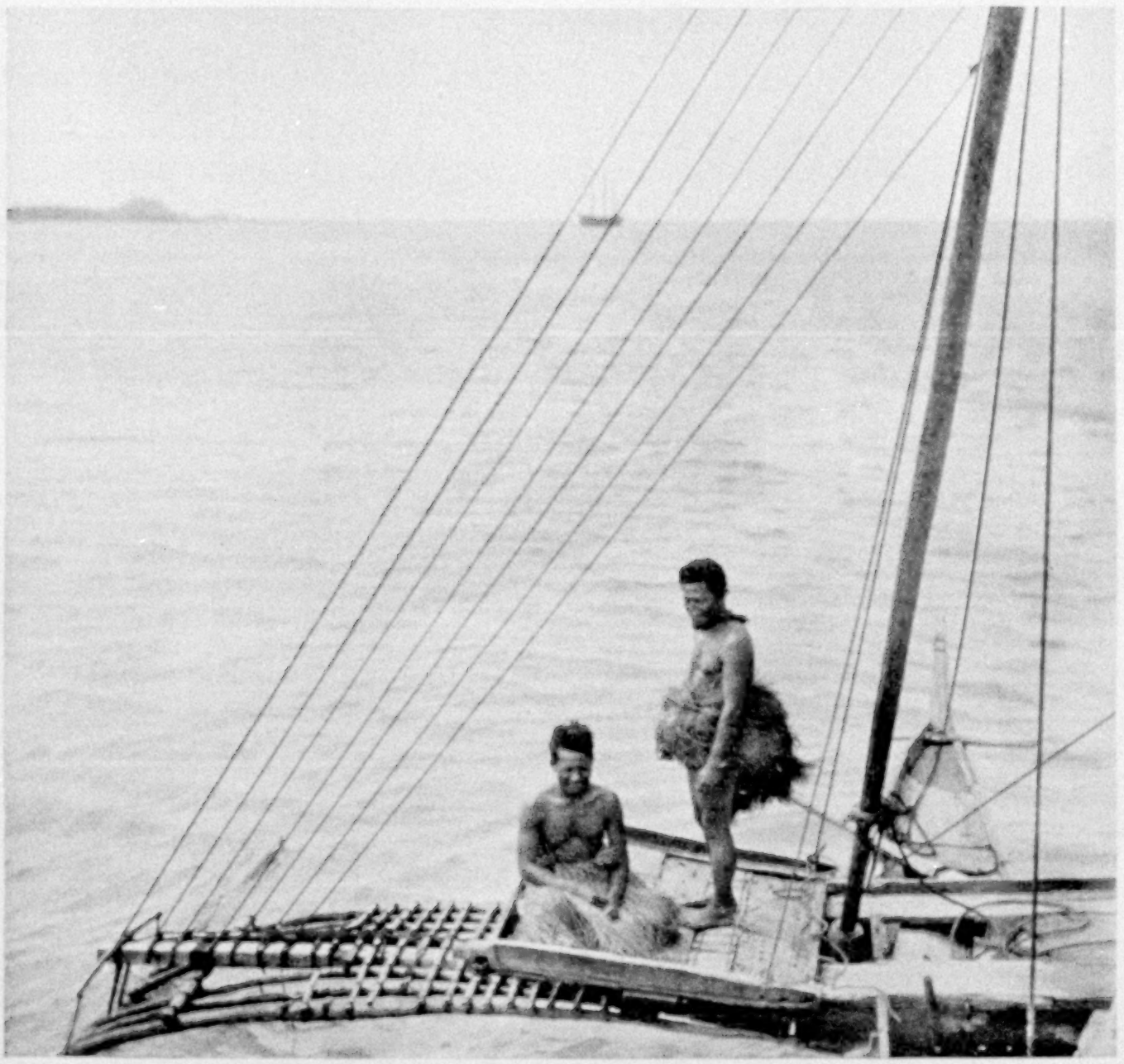

Photograph from Hugh M. Smith

A SAILING CANOE AND ITS CREW IN PRIMITIVE COSTUME ON JALUIT LAGOON: MARSHALL ISLANDS

Jaluit, the chief island of the Marshalls, is an atoll with fifty islets on a reef. The lagoon around which these islets are grouped has a depth of 25 to 30 fathoms. Under Germany, Jaluit was the seat of government of the Marshall Islands and Nauru was assigned to that group, although the latter was 300 miles away and had its own language and distinctive customs (see text, page 561).

to the tropics. The houses of the white settlement are built of one thickness of boards and roofed with galvanized iron. The partitions stop about six inches below the ceiling, leaving spaces for ventilation. Wide verandas surround the houses, and these are the true living-rooms. The cook-houses are detached.

There are no wire screens. The almost constant trade winds keep away flies, but cockroaches as large as humming-birds fly in and out, and moths, lured by electric lights, dart against the ceilings. There are beautiful sphinx moths, which are caught by the natives, tethered by threads tied to their proboscides, and worn as ornaments upon their heads or shoulders.

Lizards, which scramble over the ceilings stalking flies, occasionally lose their footing and drop upon the head of any one beneath them. Rats make runways of the ventilating spaces; shore-crabs ravage gardens unless they are surrounded by crab-tight fences, and armies of ants attack cupboards and refrigerators unless they are defended by having their

feet set in cups of water, which in turn must be covered with kerosene to prevent the breeding of mosquitoes.

All food is sent to the tropics in sealed tins, but as soon as they are opened weevils get in and work destruction. Every bed is fitted with a mosquito net, which must be cleared of mosquitoes that hide in its folds, before it is securely tucked under the edge of the mattress, if one would enjoy sleep.

THE SERVANT PROBLEM IN THE SOUTH SEAS

Wages are low; a native boy (all men employed as servants or in any capacity are "boys") can be hired as cook for one pound a month; a house boy for fifteen shillings; a laundress, who brings one or two helpers and works two days a week, receives one pound a *month*.

The servants are fed where they work, but sleep in their own huts. These native servants are like white ones, in that some are good and some bad. The good ones are treasures—faithful and honest. One conceives the same affection for them that the masters had for the negro house servants before the Civil War, but the best of them do not work like white servants. They need continual oversight for the sake of cleanliness and economy. House-cleaning, for instance, is conducted with a great deal of noise and splashing of water, but only the high places are touched, and if the cook finds a supply of dish-towels he throws away the soiled ones with the remark, "plenty more."

The reader can see that residence in the tropics is not one grand, sweet song; that one does not merely open one's mouth to let fruits fall into it; but, notwithstanding these drawbacks, it has its agreeable side.

OCEANICA'S ISLES DE LUXE

The master of the moorings, a man who has spent thirty years in the islands, is in the habit of saying, "The first ten years are the worst." Nauru and Ocean Island are really isles de luxe, for they have electricity for power and lighting; a refrigerating plant filled with beef and mutton supplied by live cattle and sheep brought up from Australia by each boat. Other advantages are a bakery, steam laundry, and plumbing with salt- and fresh-water shower-baths.

None of the other small islands has these luxuries; but, even without these, there is the charm of waving palms; of the shining beaches with their windrows of shingle, in which one gathers shells and coral; of the sea breaking on the reef; of the native huts glimpsed through the trees; of the white terns flying low and screaming; of tall herons wading in the shallow water at the edge of the sea; of the white clouds driven rapidly over the island by the trade winds; of the fleet of outrigger canoes sailing out at dawn or silhouetted against the setting sun as they return.

The climate is hot, but is tempered by the trade winds. For six months I watched the temperature range between 78 and 86 degrees; it rarely exceeds 90 degrees in any season. The sunshine in the middle of the day is blinding and scorching hot, but in the shade one suffers less than on many July and August days in the latitude of New York, in spite of the extreme humidity. About 4 o'clock in the afternoon the heat of the sun's rays becomes moderated and the evenings are delightfully cool.

SUNRISE AND SUNSET AT SIX THE YEAR ROUND

The sun rises at 6 and sets at 6 the year around; there is no daylight-saving there. The only change of seasons is when the "westerlies" come in the rainy season. These tropical rains descend with great violence. In the year following the three years' drought, previously mentioned, there was a rainfall of 150 inches, 10 inches falling in one night.

The violence of the wind resembles that of a blizzard, except that it is warm; but this is not a hurricane. The Line islands are not in the hurricane belts, which lie to the north and south of the Equator.

There is never any fog on these warm seas, and the brilliance of the moon and stars is unknown in the north. The pointers of the "Great Dipper," as it swings around in the heavens, are forever pointing to the Polar Star, forever out of sight below the horizon, and the "pointers" which mark the position of the Southern Cross are forever pointing

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Photograph from Hugh M. Smith

COMMERCE CRAWLS APACE IN THE CAROLINE ISLANDS ADJACENT TO NAURU

The shed houses a fisherman's seine and the rickety stand holds the weight of his season's crop of copra, which he is trusting to the sun to get into a properly marketable condition for him.

at that rather feeble constellation, lying in the south.

The brilliance of the sunsets is beyond words; sometimes the whole sky is laced with streamers of crimson, changing to softest amethyst, with which the sea and the beach are tinted, while level bands of aquamarine stretch across the horizon behind the glowing streamers of color.

AMERICAN WHALERS INTRODUCED A PIDGIN LANGUAGE

Nauru has its own language, which is not understood by other islanders. In common with all the Pacific tongues, it abounds in vowels, each of which is pronounced, so that a native talks with the mouth wide open.

In the intercourse between the American whalers and other white men in the Pacific and the natives, a quite workable language has been evolved, which is known as pidgin, *bêche de mer*, or beach la mar. Its foundation is probably Chinese pidgin, but it is full of words common to the islands. *Kai kai*, for instance, is the universal word for food; it is also the verb *to eat;* it is used humorously by white residents, who invite their friends to *kai kai*.

Belong, pronounced b'long, is in common use. A native does not say "My brother"; he says, "Brother belong me." You do not say, "What is your name?" You say, "What name belong you?" You do not send a servant to the store to *get* groceries; you send him to "*catch*" sugar, flour, etc.

Bullamacow is the word for meat—either live cattle or canned meat of any kind. This is said to have arisen from the misunderstanding of their names by the natives when a bull and a cow were landed on one of the Samoan Islands.

SOCIAL LIFE AMONG THE WHITE RESIDENTS

While society is small, it is an interesting little group of people, who are familiar with South Africa and India, who know the "Never, Never" of Australia and the mountains of New Zealand, and

who always call the British Isles Home with a capital H. Their sons fell at Gallipoli and on the Marne, but they carry on.

Beer and skittles is a fact and not a mere saying. Skittles is played with nine pins, in a bowling-alley which had originally a long German name. Cricket is played, and tennis, and dinner parties are given with the formality of similar functions in civilized lands, save that the table is served by barefooted servants in lava-lavas, with wreaths of flowers on their heads, and there are dishes which are unknown to temperate climes.

Here one enjoys such food as the coconut-crab, or robber-crab, which climbs coconut palms for the fruit, lives in holes in the ground, and resembles a lobster in appearance and flavor; crayfish which are similar to those of the California coast; a great variety of fish, which are brilliant in color and delicious to the taste; the *pawpaw*, or mummy apple, a fruit which resembles a melon, but grows on a small tree; and sour sop, a variety of custard-apple which has a soft, white, subacid pulp, tasting like a fruit salad *with whipped cream*.

During the war there were many small functions for the Red Cross, as well as a play in the theater where the audience sits under the stars, and several fairs to which the natives contributed their shillings. In one of these there was a native market, managed by the chiefs, where pigs, chickens, and coconuts were sold for the cause.

> "There's a schooner in the offing
> With her topsails shot with fire,
> And my heart has gone aboard her
> To the Islands of Desire."

What does it matter if the schooner is pervaded by the rancid odor of copra and populous with cockroaches, if natives traveling from one island to another share the deck space with the sheep and pigs? They are still Islands of Desire. The charms of the South Sea are real. Those who know them best love them most, and they gladly return from holidays spent at "Home" to take up island life with its limitations.

"A WIDE OCEAN, BUT A NARROW WORLD"

Would you like to do that, to cut loose from society, from convention, from civilization itself, and to sail and sail and sail, dropping familiar shores and landmarks; dropping the North Star, around which the whole familiar world revolves, around which history revolves—there is little history below the Line—and finally to make a landfall on a coral isle where coconut palms wave their shining fans above the dazzling beaches and gentle brown savages gaze curiously at the visitors? It has been done many times; the palms are there, the brown people are there, but they no longer look upon white men as gods descended by the rainbow bridge from the heavens; they have been disillusioned.

But let no one be deceived into believing that because these tiny islands are so remote, so lost in the sea, and society upon them so limited in numbers and so cut off from civilization, that one could flee to their lovely shores with the proceeds of crime, either stolen wealth or a stolen bride, and live an idle, luxurious life with the past safely concealed.

"The Pacific is a wide ocean, but a narrow world." Intercourse is not frequent, but it is constant; everybody knows everybody else, from Jaluit to Tonga, from Papeete to Port Moresby. Civil servants, missionaries, ship masters, traders keep up a system of communication that puts Marconi to shame, and just as in a small village gossip is more rife and uncharitable than in a large town, so it is in these small island communities.

Notice of change of address of your GEOGRAPHIC MAGAZINE *should be received in the office of the National Geographic Society by the first of the month to affect the following month's issue. For instance, if you desire the address changed for your January number, the Society should be notified of your new address not later than December first.*

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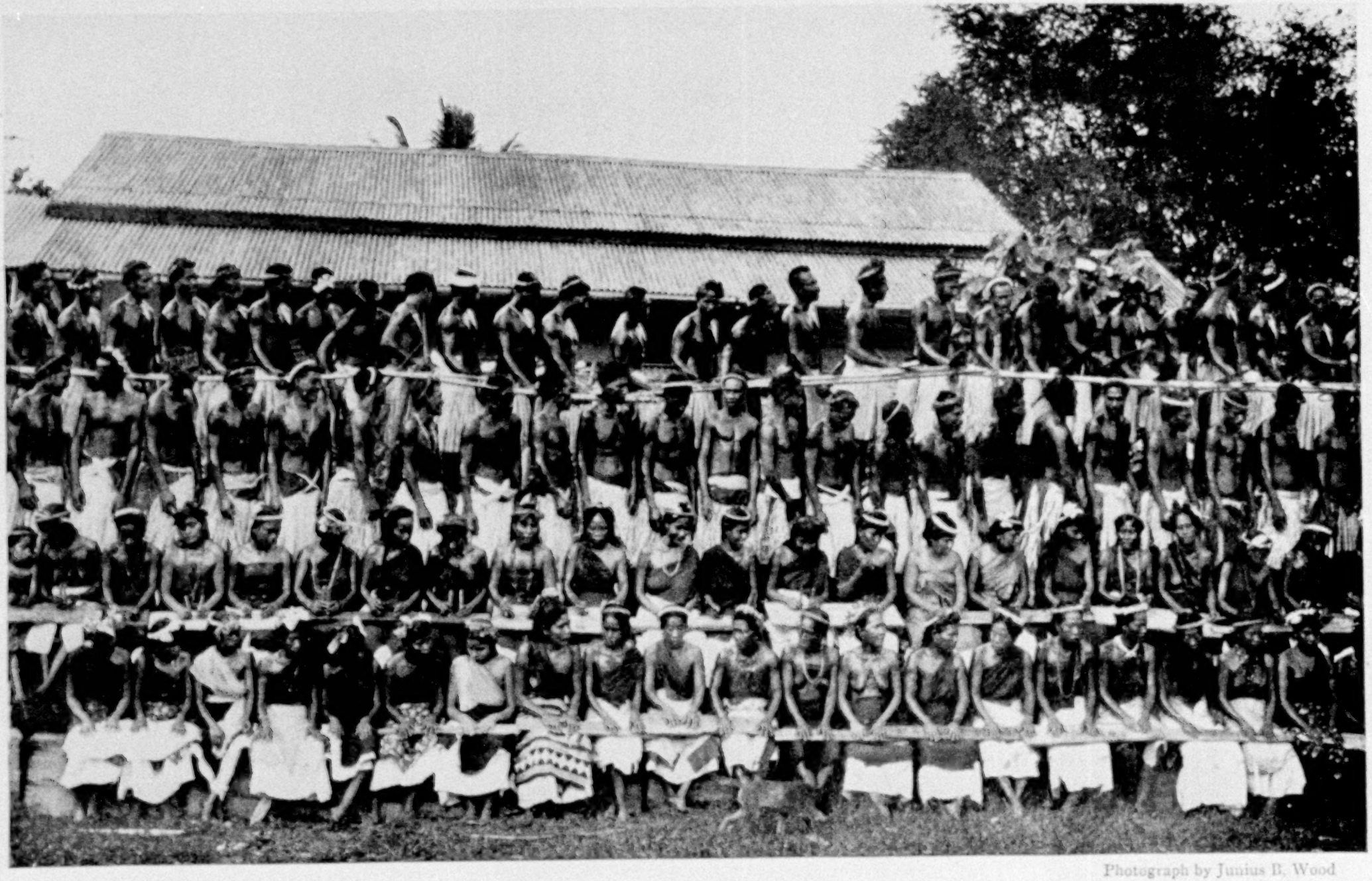


Photograph by Junius B. Wood

A FEW OF THE TWO HUNDRED PERFORMERS IN PONAPE'S NATIVE DANCE

The men wear short fiber skirts, wreaths of flowers around their heads, and many strings of beads, while the women's costumes are as varied as a Fifth Avenue fashion show. The bodies of all the dancers, having been rubbed with coconut oil, glisten like polished bronze.

YAP AND OTHER PACIFIC ISLANDS UNDER JAPANESE MANDATE

By Junius B. Wood

With Illustrations from Photographs Taken by the Author in the Spring of 1921

LIFE is easy and time drifts slowly by on the little tufts of green in the warm blue of the Pacific which now are under Japanese mandate. The largest is less than 13 miles in diameter, while a half dozen coconut trees, surrounded by nature's breakwater of mangroves, tells the whole story of many of the smallest. Nobody knows how many or how large they are. One careful estimate is 1,000 islands, with a total area of 970 square miles.

Sown in the form of an inverted T, the islands stretch 2,462 miles east and west, just north of the Equator, from Lord North Island, the westernmost of the Carolines, to Mille Atoll, the easternmost of the Marshalls; and 1,170 miles north and south from Pajaros, the most northern of the Marianas, to Greenwich, in the Carolines. Small as they are, they stake out about 1,500,000 square miles in the North Pacific.*

Men of many nations — Portuguese, Spanish, English, American, French, Russian, German, and now Japanese — have wandered through the islands in the centuries since Columbus dared the unknown sea.

They came as explorers seeking El Dorados, soldiers to conquer new lands for their kings, pirates to recuperate in the balmy tropics, missionaries to teach and trade, "blackbirders" gathering laborers for the plantations of New Zealand and Australia, beach-combers drifting out their aimless existence, and all the strange medley of humanity that life's eddies cast into strange corners of the world.

Each has left a mark, a mere fleeting touch—the name of an island, a river, a mountain peak, or a family. But unconquerable nature is unchanged and the tropical jungle has covered the scars of their works, while the white skins darken with each generation of children and the family name is but a memory of an ancestor gone and forgotten.

They were but ripples on the surface. The old life runs along, deep and unchanged; the new is there for a generation, fading and disappearing in the next. At home amateur theatrical and movie companies don strange costumes to portray spectacles of departed ages. Here the past is masquerading as the present—whatever may be pleasing to the rulers of the day—and the costumes are as weird.

A GOVERNMENT IS POPULAR IN PROPORTION TO THE FREQUENCY OF HOLIDAYS

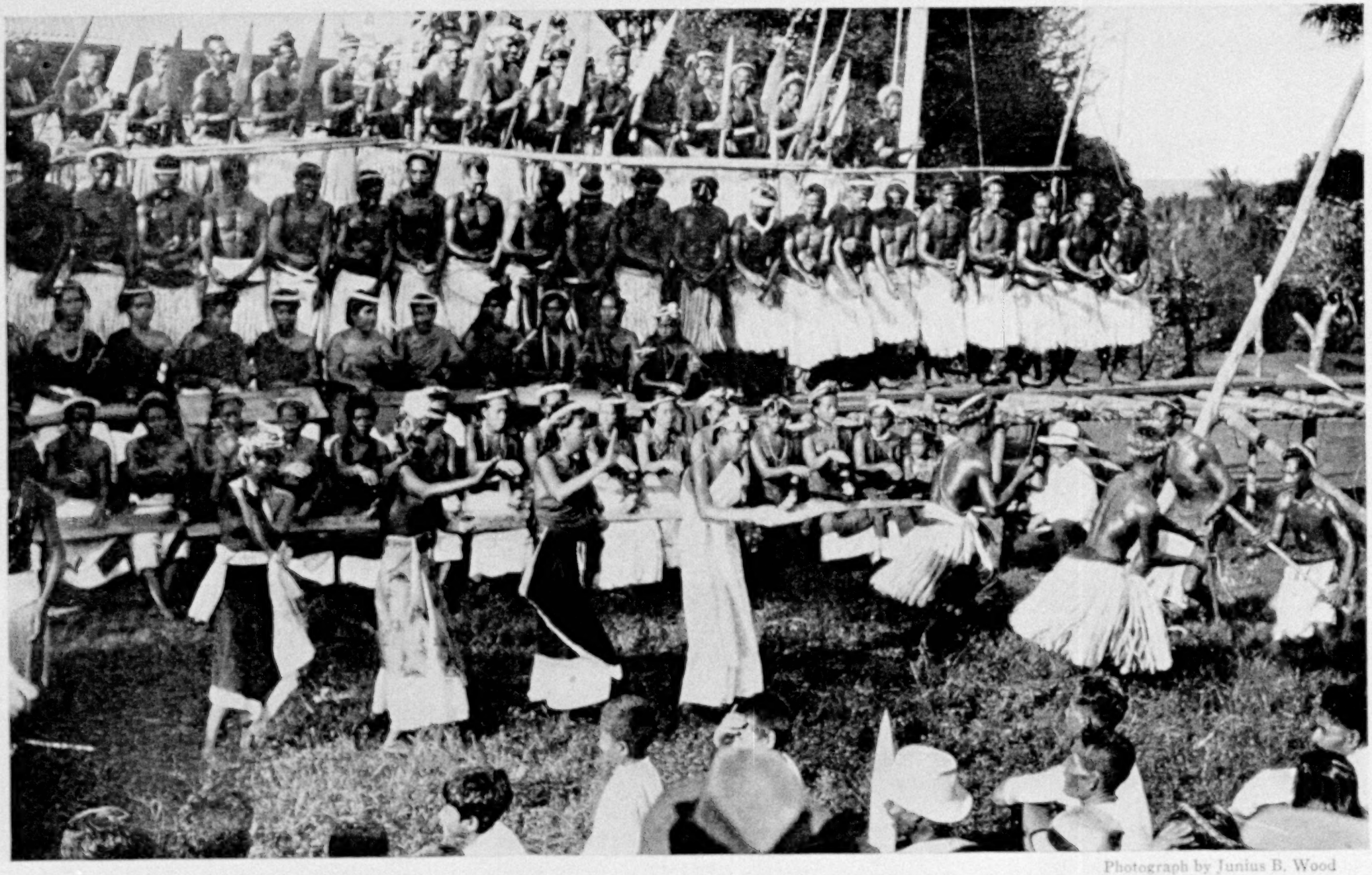
The last time our ship anchored in Ponape Harbor was on the Japanese national holiday celebrating the accession of the first mythological emperor. In 1921 it was the 2,581st anniversary.

During the hour's ride to shore in the little launch, winding between the sunken coral reefs showing white through the clear green water, the genial naval commander of the island explained that a holiday and big celebration had been arranged. Any government is popular with the natives in proportion to its holidays.

That afternoon the flag of the Rising Sun was flying over the big parade ground above the village and the naval band played the Japanese national air.

The natives were there to watch the athletic games, just as they or their fathers and mothers had come on other national holidays when the Spanish or German colors flapped in the breeze over the same parade ground and they joined in singing other patriotic songs in other languages. Some remembered the even earlier years, when Fourth of July was the big holiday, and a few could recall two occasions when bloody revolutions started against the Spanish rulers as part of the celebration of the American natal day.

* See map supplement with this number of The Geographic.



Photograph by Junius B. Wood

THE GRAND FINALE OF PONAPE'S MUSICAL COMEDY AND GRAND SOIRÉE (SEE TEXT, PAGE 615)

The four girls and eight men in the center of the lawn, the stars of the performance, are going through the evolutions of a wand drill and an expurgated "hula," for which the "chorus" forms the customary background.

MUM

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Photograph from Junius B. Wood

ON THE KITI RIVER, PONAPE: CAROLINE ISLANDS

Back of Ronkiti, the port of Ponape, there are practically uninhabited tracts of level country crossed by many streams with cascades suitable for conversion into water-power for industrial use and of sufficient volume to float rafts and large boats.

Photograph by Junius B. Wood

A NATIVE MANSION IN THE CAROLINE ISLANDS

The dwellings, which are usually surrounded by a neatly swept clearing devoid of grass, are built upon platforms to keep the floor—the family bed—as dry as possible, for the ground is at times deluged with tropical rains.

Between the finish of a coconut-husking contest for native men and the start of a half-mile race for Japanese residents, in which merchants, officers, and sailors puffed and strained like real democrats, the busy little civil governor, tiring of the quiet monotony of a wicker chair under an awning, started to investigate the origin of a squat building between the Spanish church and the German school.

THE STORY OF A "BATH-HOUSE"

Of solid stone and mortar, with iron-barred windows and heavy doors, it had withstood time and revolutions. The governor said it was a bath-house. Several dutiful Japanese subjects corroborated his verdict and exhibited in mute proof one of the combination casks and furnaces in which they delight to parboil themselves after every day's work.

However, the Spaniards did not build block-houses of stone and iron for baths. The massive stone wall cutting off the end of the island where the settlement is located, just like the crumbling walls in Mexico and South America, showed their ambitions and fears ran in other directions.

The wall in Ponape now is an ornament of the past. The Germans cut roads through it and vines cover its rough face.

"We'll ask this woman; her father was a German," said the governor.

A young woman, fatter than any of the others in the group, sat under the shade of a tree, nursing a husky baby. A few weeks earlier she had been noticed at a native dance, her light skin contrasting with the other women, bare from the waist up, as they swayed and sung to the strange harmony.

The governor spoke to her in German. She shook her head, unsmiling and uncommunicative. The language of her father was already forgotten. The question was repeated in choppy Nipponese to a young Japanese, who translated it into the native vernacular.

"She says the Germans used it as a chicken-house," he explained.

"And what was it before it was a chicken-house?" asked the governor, like a real antiquarian.

Nobody in that ladies' nursing circle knew. Why worry about the past or future when there is nothing to worry about in the present, is Ponape philosophy.

THE GERMANS MADE THE NEW GUINEA NATIVES POLICEMEN

By this time Governor Okuyama had his dander up. Something must be found out. Leaning against a tree was a study in black and white, an outsider among the straight-haired, brown-skinned natives. Shirt and trousers were white; feet, hands, and face were inky black, with a jaunty white cap on his woolly pompadour.

"He's from New Guinea," the governor explained. "The Germans used them as policemen, because they are so black the natives are afraid of them."

The former local terror, though he understood both German and English, could not remember farther than the chicken-coop era; but, true to his police training, he went to find out. He returned with a report that it had been built and used as a jail. He added that several of its inmates, hurried to an untimely end, were buried under its cement floor, promising disturbed dreams for those who doze in its modern bathtub.

INQUIRING FOR A BOY IN AMERICA

The foot-race was finished and the governor flitted to distribute the prizes to the winners. An old man approached timidly. A smile encouraged him.

"You American?" he asked in his little-used English.

It had been ten years since the last American missionary had left the island. Possibly there is some similarity among Americans.

"A Ponape boy lives in United States," he said.

"Whereabouts in United States?" I asked.

He shook his head hopelessly.

"Just United States," he replied. "Perhaps you know him," he added, for in all of Ponape's continent—of 134 square miles—everybody knows everybody else, as well as some of the great men on the other islands, to them far away.

"Perhaps. What's his name?" I suggested, knowing a few hundred out of America's 110,000,000.

XUM

Photograph by Junius B. Wood

THE LARGEST AND MOST PRETENTIOUS CHURCH IN PONAPE: CAROLINE ISLANDS

This edifice, originally built by Americans, was remodeled by the Spaniards, and services are now conducted in it by native leaders.

"Uriel Hadley. He's a Ponape boy," he repeated, a touch of pride in his quiet voice.

There was no Uriel among my memory of many Hadleys, and his face fell in disappointment. He could not understand that anybody could live in America and not know the "boy from Ponape." Something was wrong, but he did not know why.

I walked away from the noisy games through one of the gaps the Germans had made in the thick stone wall, past the silent church, and along a path rapidly growing narrower, as it passed from the little fields which the Japanese were cultivating into the ever-crowding jungle.

I stopped to look across the jungle-closed valley to where the late sun was tinting the palms on the mountain top, just as it had done in the dim, forgotten days when Ijokelekel came in his war canoe. The pit-a-pat of bare feet approached along the path. It was the old man, one of the coconuts salvaged from the husking bee in his hand.

"Are you a Ponape boy?" I asked as he stopped.

"I'm Ngatik boy; can't go home," he said, uncovering another of the tragic romances of the Carolines.

AN AMERICAN SAILOR'S COLONY ON NGATIK

He pattered along down the path, carrying his day's harvest, his exile and the story of Ngatik forgotten. In the early '60's an American whaler was wrecked on Ngatik, 75 miles southwest of Ponape. Visioning a choice assortment of white heads to hang from the eaves of their huts, the natives attacked the survivors.

But the sailormen were well armed, with the result that most of the ambitious warriors were killed, and the new arrivals settled down to a life of laziness and a plethora of wives until the next wandering whaler sighted the lonesome island and took them home. That accounted for the old man's familiarity with English.

"You like coconut?" he asked with native hospitality, proffering his entire meal.

"I live here, men's hotel," he explained, as the gift was declined. He trotted off

Photograph by Junius B. Wood

AN ALTAR OR TOMB IN THE SUN TEMPLE OF NANMATAL, PONAPE: CAROLINE ISLANDS

Beneath this altar there was once a large room with an underground passageway leading outside the walls of the mysterious city (see text, page 607).

on a side path through an opening in the brush.

In a little cleared space stood the "men's hotel." It was a roof of thatch, open on all sides. Fastened to the poles supporting the roof, about four feet from the ground, was a braided hammock-like floor of fibers and leaves. Cracking the coconut on the fringe of rocks which protected the hotel from the crowding jungle, he climbed to the unsteady floor, squatted on his haunches, and started the evening feast, his day's work done.

Down at the foot of the path where the narrow bay separates the main island from the rocky head of Chokach (one of 33 islets surrounding Ponape), half a dozen outriggers were tied to the mangroves. Other bare feet were coming along. An athletic young man, a wreath of flowers on his head and a shirt of fiber strings covering his hips, untied one of the canoes. The little narrow hull, hollowed from a single tree trunk, was so narrow that his knees rubbed as he sat on the cross-bar.

"Want go Chokach?" he offered.

"I'm Pingelap man," he vouchsafed, as his narrow paddle drove the canoe across the quiet water.

Hospitable, good-natured, and easy-going, the Ponape natives have a temper which flames into wild revolt when pressed too hard. The first Fourth of July revolution against the Spaniards, in which the governor and four others were killed, a carpenter being the only one able to escape to the warship *Maria Molina*, was precipitated when a road boss forced the natives to pick up rubbish with their hands.

The next revolution, in 1891, started over the rivalry between an American mission church and a new one established by the Spaniards near Metalanim Harbor, on the east side of the island. The natives disposed of an officer and twenty-five soldiers who interfered in the religious competition, and when a larger force of two officers and fifty soldiers was sent from the garrison at Ponape their worldly worries ended with similar celerity.

A transport with 3,000 soldiers came from the Philippines. It went ashore on the reef outside of Metalanim, and in the ensuing mêlée, according to the widow of the American adventurer who later piloted the transport off the reef, three natives and 1,500 soldiers went to an-

XUM

Photograph by Junius B. Wood

PORTION OF THE WALL SURROUNDING THE ANCIENT CITY OF NANMATAL, PONAPE: CAROLINE ISLANDS

Numerous narrow, straight canals, now overgrown with jungle, encircle the walls. (See reference in "The Islands of the Pacific," page 553, and text, pages 607 to 615.)

other world to settle their religious differences.

That ended the local holy war until 1898, when the five tribes on the island were having a lively fight among themselves, which Spain, on account of its trouble with the United States, was too busy to meddle with.

After that Germany exercised the lien which it had held on the Carolines and Marianas since 1886 and bought them from Spain.

About noon, on October 18, 1910, the young German overseer of a gang of natives building roads, or rather footpaths, on Chokach struck one of the men with a whip. That was not the first occasion, but it was the last.

Governor Gustav Boeder, of Strassburg, a retired army officer, who heard of the riot and death of the overseer, hurried from his headquarters on the hill overlooking the settlement. He believed that his presence would awe and quiet the natives. He was paddled across the same narrow bay which I was crossing. As he stepped ashore, a bullet fired from the hillside struck him dead. The rifles captured in the Spanish days had been brought from the hiding places.

HEADSTONES TELL TRAGIC STORY

Four granite headstones, on which are neatly chiseled their names, ages, and the date—October 18, 1910—in the little foreign cemetery, tell the story of that day.

A month or so later a German warship happened to anchor in the harbor. The natives were as peaceful as ever, but there were no officials. "Joe of the Hills"—Joseph Creighton, a London gipsy, who lived with the natives, away from the settlement, and died in Ponape only last year—was the only foreigner alive to tell the story.

The force from the ship rounded up the inhabitants of Chokach. Half a dozen ringleaders were shot, others were imprisoned, and the remainder—about 200 men, women, and children—were deported to the barren phosphate island of Angaur, in the West Carolines. To repopulate Chokach, other natives were brought from Ngatik, Pingelap, Mokil, and Mortlock islands.

"Mrs. Anna lives Chokach," said the boatman as he lifted his canoe into a canoe-house, a thatch roof under which were a dozen outriggers, either on the ground or on cross-beams tied to the roof-poles.

Who "Mrs. Anna" was I did not know, but the affable young native said she spoke English and German, and we started along the well-built path which encircles the island. Evidently she was a local personage of importance.

THE WOMEN CARRY THEIR TOWN FROCKS AROUND THEIR NECKS

Stretches of the path hugged the shore and hillside. In other places the water would be hidden by the dense foliage.

The little houses were scattered on each side, none of them more than a hundred yards away. A few were of rough boards, one had a corrugated tin roof, but most of them were thatch roofs, woven palm-leaf walls, and roughly smoothed floors, worn shiny by many bare feet and slumbering backs. All were elevated on posts. When the weather is wet, it is very wet.

The rockiest spots also were selected for building sites. Let nature fight the battle with the jungle.

A little boy with no more clothes than when he was born and a girl with a few feet of calico for a skirt were driving a family of goats. Occasionally we met a barefoot man or woman. Some of the men wore trousers and undershirts; most of them had only the knee-length, artistic fiber skirt hiding their loin-cloth.

The women, like their sisters in lands where dress is more of a problem, had a town gown and a home costume which meant no dress at all, merely a cotton skirt reaching below the knees. Most of them walking toward the village carried the town wrapper comfortably looped around their necks, ready to be slipped over their shoulders when the settlement was reached.

MEETING THE WIDOW OF A FAMOUS SCIENTIST

"Mrs. Anna now," said the man. A tall, straight old lady was slowly approaching. She stopped at the sight of a stranger. Her thin gray hair was smoothly parted in the middle. Many years of

XUM

Photograph by Junius B. Wood

A YOUNGSTER OF PONAPE STANDING ON THE THRESHOLD OF THE ISLAND'S MOST ANCIENT TEMPLE

Nanmatal, on the east coast of Ponape, was a prosperous city of stone walls and canals hundreds of years ago. Its origin is lost in the folklore of the islanders (see text, pages 553 and 607 to 615).

THE MERCHANT MARINE AND NAVY OF MOEN ISLAND ON REVIEW IN TRUK LAGOON: CAROLINE ISLANDS

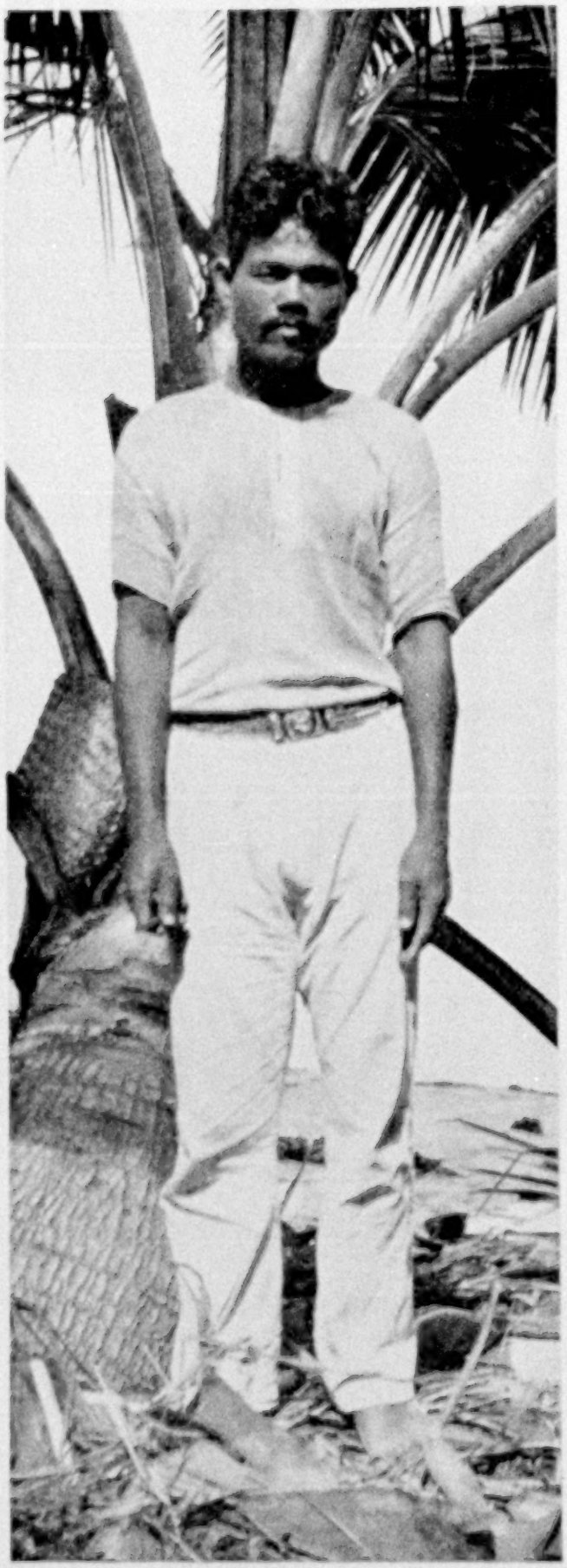
About forty of the little islands of Truk are scattered about in this big lagoon, which could accommodate our largest transatlantic liners.

tropical suns had not browned her to the colors of the other natives. Tattoo-marks on the backs of her hands ran across the wrists and disappeared in the loose sleeves of the immaculately clean wrapper. Other designs showed on feet and ankles.

"I'm Mrs. Kubary," she said. This, then, was the relict of that striking character on whose studies much of the scientific knowledge and romantic lore of the Carolines is based, who came to Ponape when a youth of 19, full of enthusiasm and vigor, won a name for himself which reached to Europe, and wrested a wealth of coconut groves from the jungle, only to be conquered in the end, when age weakened strength and courage.

The day the fight relaxes, the jungle, always waiting, starts to reclaim its own. A monument in the little cemetery, with a bronze slab sent by his scientific colleagues in Europe, showing the profile of a strong face, with drooping moustache and eye-glasses, and the legend, "Johann Stanislaus Kubary, 1846-1896," epitomizes his hopeless life story.

The jungle has choked the botanical garden which Kubary started and closed the paths across the mountains which the warrior trod in the days when Ponape had a population of 60,000 instead of



Photograph by Junius B. Wood

THE FINEST TYPE OF NATIVE MISSIONARY

Though the American missionaries abandoned their work on the island of Truk years ago, the Reverend Ham Aettu still preaches the gospel to his people. He knows an American named Louis and would like to hear from him.

3,000. Some say that the rifles captured from the Spaniards are hidden in that jungle.

A new path around the edge of the island, built under Japanese supervision, past the houses of its remaining fringe of population, is the only route of communication by land. Lieutenant Yamanaka, the present naval commander, treats the natives with gentleness and consideration.

Seated on a rough rock at the side of the Chokach footpath, the woman, who is said to have been received at court in Berlin, and in Hamburg society in the early '90's, when she was a tropical belle, patiently told her story. Then she was 25 and handsome; now she was 56 and faded. The tropics had reclaimed her, quick and sure.

"My name is not Kubary now," she added, as if following the thought. That was another miniature of the changing life of the Carolines. When the struggle seemed never to be won, Kubary committed suicide.

The widow, still a young woman, married a young native. He was one of the leaders who killed the German governor and was executed. The widow and her daughter—she has flown from the jungle—were among the 200 deported to Angaur. The older has returned to take another young native husband. The young man in that little world who has the Kubary widow for a wife has social standing if not domestic contentment.

HER FATHER WAS A BALTIMOREAN

"My father was Alec Yeliot, of Baltimore," she continued. "He was buried here by Dr. Doane (one of the early American missionaries). I was 14 years old when I married Mr. Kubary. We traveled through all the islands while he made his studies for the Godefroy Company, and then we went to Europe.

"We went everywhere — England, France, Germany, Italy, Russia—but so much has happened to me since and nobody here understands it that I have forgotten. Only a year after we were back Mr. Kubary died, leaving me and our daughter. She is now a teacher in the French convent (naming a British city). All of the past is gone, but life goes on just the same.

"My father came from over the seas and my husband from another land. Our girl has gone, for she was of their race, but I have come back. The islands never change, and these are my people and my life."

She folded her tattooed hands over her knees, showing thin through the cotton wrapper, and silently gazed across the bay to where the Japanese transport was riding at anchor. For a few hours each month that reminder of the outside world breaks the monotony of Ponape; otherwise life flows along smoothly and contentedly, unthinking of the past or of tomorrow.

TATTOOING ADORNS THE BELLES OF OLDEN DAYS

Formerly the natives were walking pictorial histories. After the missionaries came, tattooing was discouraged, not caring to be tattooed themselves, and in recent years it has been prohibited. It was considered a sign of courage, without which a young man or young woman was not worthy to marry. This practice even went so far as systematic mutilation of the sexual organs. Scientists are divided whether this, an epidemic of smallpox brought by a whaler, or the frequent tribal wars are responsible for the diminished population.

The young people still practice an effete modification of the old tests of courage by pricking cicatrices, or little raised welts, on their flesh. Most of the girls prefer the right shoulder for the adornment, though some have them on their breasts. The boys adorn shoulders and chests.

The welts, which are formed by making a fairly deep cut in the flesh and keeping it open until the new skin grows into a ridge, are usually about an inch long and a quarter of an inch wide. Sometimes they are arranged in straight lines, one for each admirer, like the bangles on a high-school girl's friendship bracelet; again they may make an asterisk or are scattered indiscriminately over shoulders, breast, and back.

The older people still show the old adornment, the lobes of the ears stretched into loops until they touch the shoulders, and bodies and limbs tattooed, the most distinctive effect being broad parallel stripes of solid black from ankles to

Photograph by Junius B. Wood

CORRECT "STREET" CLOTHES IN TRUK

This one-piece poncho-like garment is the prevailing style in the Caroline Archipelago. When the wearer is working or away from the settlement, he throws it aside, leaving his waist and shoulders bare. Both the men and women of the older generation are tattooed, but this practice is now prohibited.

XUM

Photograph by Junius B. Wood

THE BEST HOTEL IN TRUK : CAROLINE ISLANDS

The guests sleep on especially prepared platforms, and an individual may surround his particular corner with nets or leaves for privacy and protection from mosquitoes. There is always plenty of fresh air, as the house is open on all sides.

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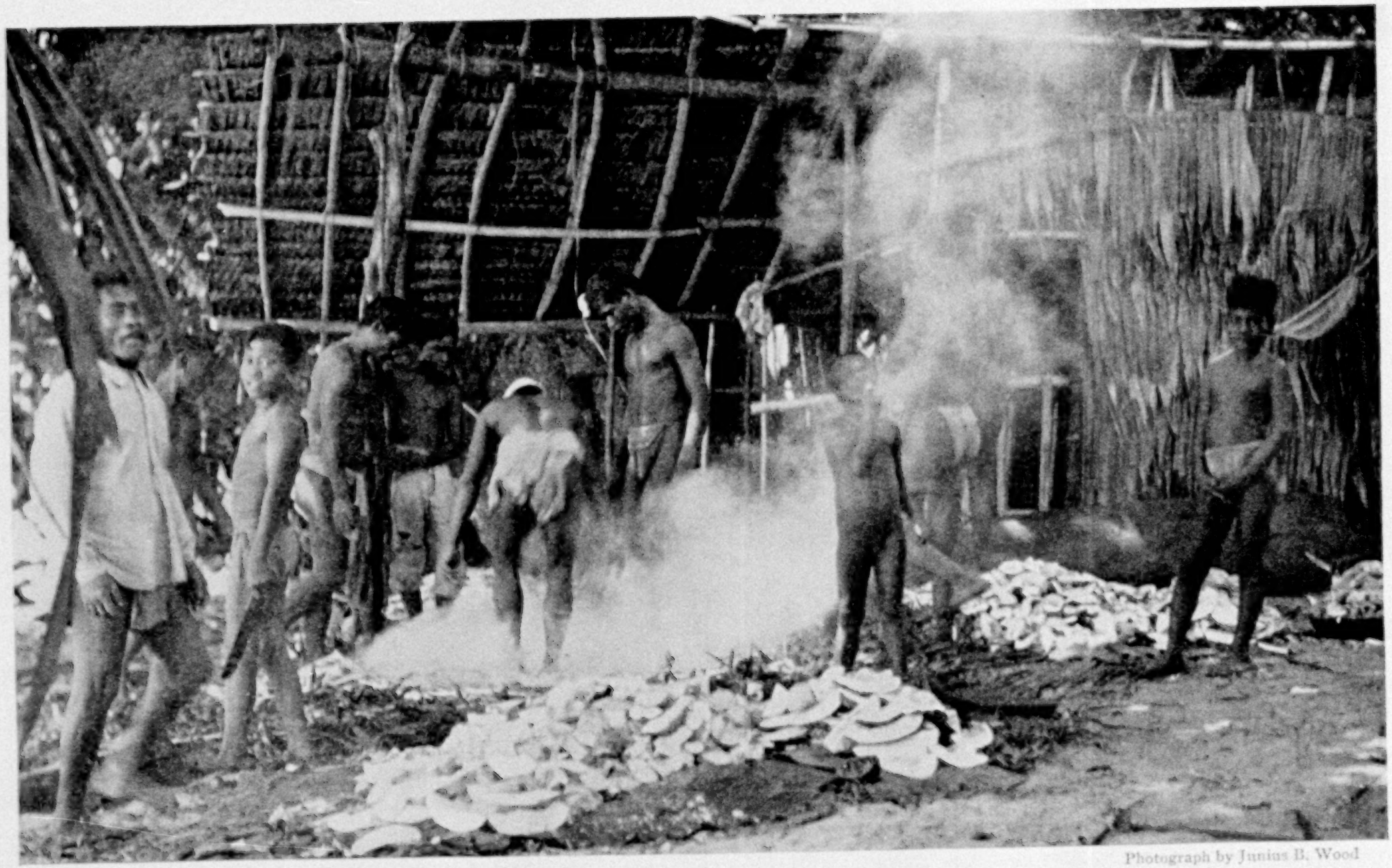

Photograph by Junius B. Wood

THE CHEFS OF TRUK PREPARING FOR A COMMUNAL FEAST

The breadfruit has been scraped and quartered and the shoots of the banana are being spread on the red-hot stones in preparation for the baking.

Photograph by Junius B. Wood

FISHERWOMEN HAUL THE SEINE IN TRUK: CAROLINE ISLANDS

They advance in a long line, holding the big nets in each hand, and thus form a wall as they drive the fish into shallow water. Daily practice has taught them the proper moment to wheel into a circle and land their catch.

Photograph from Junius B. Wood

A GROUP OF NATIVE MEN OF WOLA, A SETTLEMENT ON THE ISLAND OF TRUK

The natives pierce the lobes of their ears and load them with such heavy weights that they expand to enormous proportions. The hill tribes of Truk are darker in color than the people of the coast, who are of light reddish-brown hue.

Photograph by Junius B. Wood

"ALL MEN'S HOUSE," OR BACHELORS' CLUB, IN TRUK: CAROLINE ISLANDS

The club is the common sleeping place for any man without a home, as well as the storage shed for disabled canoes and other rubbish. It usually has a roof of thatch and is open on all sides.

thighs. However, they follow modern conveniences and wear the long loops wrapped around the ears close to the head when they work, while skirts drape the gaily tattooed legs of the social leaders of former days.

That night there were open-air movies and Japanese sword dancing by sailors and a couple of proficient native boys on the lawn of the official residence. Visitors and dignitaries had chairs, while the others stood or squatted on the cool grass.

Movies were a novelty to the natives, but comparatively few had the energy to walk the quarter mile from the settlement to the grounds. An American comic of an indestructible man wrecking furniture, and pictures of Japanese warships, including a boat crew feverishly lowering a cutter, were the hits of the evening.

THE MYSTERIOUS CITY OF NANMATAL

Late that night, when the others were sipping the inevitable tea on the broad veranda, I slipped away down the long hill toward the settlement. In a pocket was a little map in India ink and water colors which Kubary had made in 1874 of the ruins of Nanmatal, the city of stone walls and canals off the east coast of Ponape which has outlived the facts of its origin (see illustrations on pages 597, 598, and 600).

Storms through countless generations have filled the broad, straight canals until the sands are dry at low tide, but the walls of heavy basaltic monoliths, in some places 30 feet high, have withstood typhoons and earthquakes, proof of a civilization forgotten when Quiros came, in 1595, and found the natives living then in flimsy houses of thatch and sticks.

Charles Darwin, F. W. Christian, the Rev. MacMillan Brown, Dr. Amberg, and others of greater or lesser fame have delved in the ruins near Metalanim harbor and evolved theories of their origin. They do not agree whether the patch of land, 1,200 yards long and half as wide, once was a tropical Venice or whether through the ages it has been gradually sinking, swallowed by the sea and smoth-

XUM

Photograph from Hugh M. Smith

FENGAL VILLAGE, PORT LOTTIN, KUSAIE; CAROLINE ISLANDS

Kusaie well deserves its soubriquet of "Garden of Micronesia." On Lele, an islet of Kusaie, it is said that there grows a species of wood admirably suited to shipbuilding, being tall, perfectly straight, and of great durability.

ered by vegetation. The waves still beat against its massive sea-wall, while hundreds of little shell rings, used for money and necklaces, can be found even today.

One incident chronicled by all the scientists, like the fragment of bone from which the archeologist reconstructs a dinosaur, is that a metal spear-head was once found in the ruins; and another, less generally known, comes from Capt. John J. Mahlmann, of Yokohama, that, 40 years ago, he copied two Chinese ideographs carved on one of the big stones. However, the whereabouts of the spear-head is unknown and the letter, which the English captain sent to Shanghai, was lost, and he never could locate the stone again.

Some say modern buccaneers built the city of stone without the natives knowing it; others trace it to the copper age, and the present Japanese claim it was the work of their ancestors, who built the uncemented fort in Osaka.

A similar deserted city stands in the hills on the mainland of Ponape, back of the port of Ronkiti, on the southwest corner of the island. Near this is the home of Henry Nanpei, a remarkable native chief, who has traveled extensively in Europe and America and is the bulwark of the Christian work on the island. He probably could tell more about the ruins than any other man; but the scientists have confined their researches to Nanmatal, which is more easily accessible.

Kubary first searched Nanmatal for Godefroy's museum, and when Governor Berg was in the islands he shipped so many specimens to the Leipzig Museum that the government sent an expedition to clear away the jungle and study the city and the slightly different ruins on the island of Kusaie.

The latter adjoin the settlement, and as soon as the expedition left, the natives, directed by an unawed American planter, supplemented the visitors' labors by using a good portion of the uncovered walls for building a breakwater and pier, greatly to the wrath of the Leipzig students of ancient history when they heard about it, a year later.

After his last visit to the Nanmatal ruins, Governor Berg died suddenly, justifying the native superstition that the gods punish intruders.

The present governor has a big white book in which visitors, either after exploring Nanmatal or discussing it in the cool of his residence, are requested to write their opinion of its origin.

The sight of the massive walls, silent and impressive, still surrounded by the narrow, straight canals and overgrown with jungle, is worth the blistered back, wet feet, and skinned shins necessary to reach the ruins. However, as each student has a different verdict, the present method, more reassuring for governors and less strenuous for visitors, may be equally conclusive.

NIGHT ON PONAPE

The broad road from the headquarters residence to the village below was a silvered path between black walls of trees. Only the stars were in the sky that night, and nowhere are they as bright as in the tropics.

Through the still air from a native settlement along the bay came the occasional thump of a drum and the echoes of laughter. The big parade ground was silent and deserted, the old Spanish wall and the new Japanese school-house ghostly in the starlight. No spooning couples were in the village park.

The local police turn in early in Ponape. The governor says he has arrested only twenty-two men, all for stealing. One took a bottle of sake from the Japanese store and the others eloped to short distances with their friends' wives. As the authorities discourage primitive methods of vengeance, local home-wreckers are put in jail.

The house where I was going was dark, but alive with the deep breathing of many sleepers. It was a pretentious dwelling, long and low, like a field barracks, with a narrow porch along the side, on which opened the rooms for different families. A "Hello!" brought an answering shout, and I stepped through an open door into darkness. Somebody appeared with a lantern.

My host and his family had been sleeping according to the custom of the tropics. The wife slipped on a skirt, and he with two stretches was fully clothed in shirt and trousers. He took the lantern and we went into the residential social hall,

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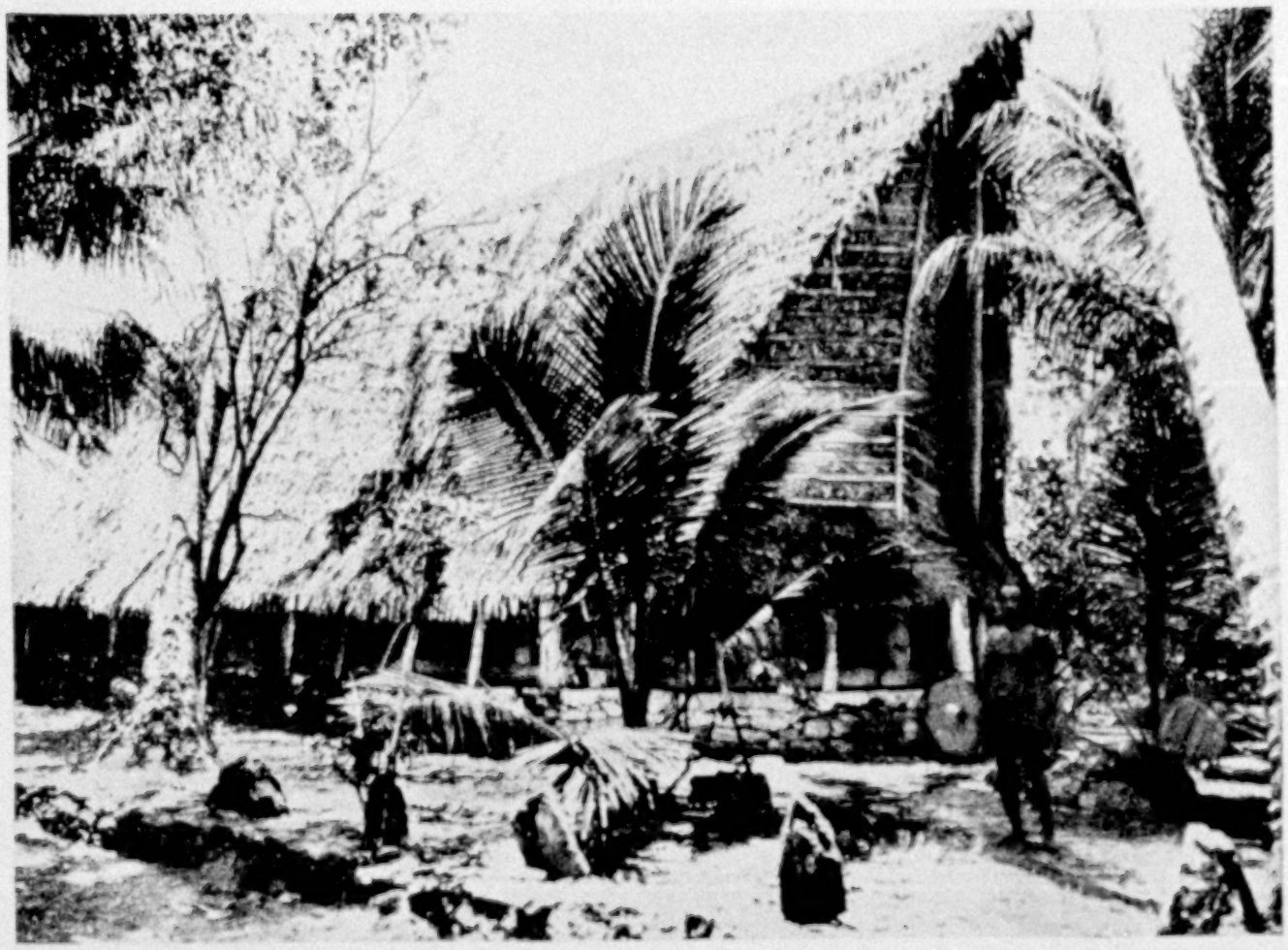


Photograph from Junius B. Wood

ONE OF THE UBIQUITOUS CLUB-HOUSES OF THE CAROLINES, NEAR TOMIL: YAP

This is where the traveler, if he be a man, meets the men of the islands to discuss politics, crops, and the high cost of living, and to hear stories of the daring deeds of bold chiefs, love intrigues, and the gossip of the Pacific.

a room with a table and two chairs and a waist-high wall on three sides. The men and boys, who had been sleeping on the floor, pulled their mats outside and continued to snore.

KUBARY'S MAP OF NANMATAL

The map which Kubary had made nearly half a century ago, with its water colors showing land and water, and each ruined building drawn to scale, was spread on the rough table under the smoking lantern. Each site had been numbered, corresponding to a list of names in native dialect down the side, like a city visitor's guide, showing the theaters, railroad stations, and leading hotel.

"Those are our names for the city," he said.

There were thirty-three which Kubary had identified and nearly as many more about each one of which this man told some story. One was the king's castle; others were the prince's castle, temples, forts, sepulchers, and holy places which common people must not enter.

Nanmatal means "in many openings," and the other native names were translated on the map into such crude descriptions as "great castle," "on the corner," "in the largest breakers," "coconut castle," "shadow of a tree," "under the chasm," "in the sepulcher," and so on for half a hundred buildings.

"My grandfather was an American, but it is hard to translate the names," he said. "My father was a native, but I have an American name. I want to go to America some time."

He pointed out the burial temple, where Governor Berg did his last excavating; the broad inclosed stretch of water, now filled with sand, which had been the inner harbor, and the wide entrance used for an anchorage when storms did not lash the sea-wall. His spirit seemed to go back to the past glories of that distant age.

Photograph from Junius B. Wood

THE FRONT YARD OF THE TOMIL CLUB-HOUSE: YAP

The ground around the building is covered with flat stones, and here many of the native conferences and dances are held. The man in the picture is leaning against one of the yellowish limestone discs that were formerly used as money on the island (see text, page 621).

"Here's where the canoe stopped," he mused, putting a finger on an unmarked spot on the south side of the ancient city.

"What canoe?" I asked.

"That's only a story," he said. "We're Christians now and don't believe those stories any more. It's only what the old natives tell."

NATIVE STORY OF THE MYSTERIOUS CITY

However, from his refusal to accompany me to the ruins and the reluctance of any natives to visit them, their superstitious belief in the dangers of the present world seem to outweigh their confidence in the safety of the future. He told the story, and it is probably as good a version of the rise and fall of the mysterious city as any which the scientists have concocted.

"Once two brothers, Oleosiba and Oleosoba, came to Ponape. They became chiefs and joined all the tribes in Ponape into one tribe. They wanted a great city and just asked for it, such was their power, and it came down from the sky just where it is at Nanmatal today. The other city, at Ronkiti, was built in the same way, and one brother lived in each city, ruling over the island. After them for hundreds of years there was only one king in Ponape. Soutolour was the last.

"When he was king, Ijokelekel, a warrior from Kusaie Island, which we call Kodou, came to attack the city. He had only one canoe and it carried 333 men. They reached Ponape in the night, and when day broke they saw the thousands of palms on the mountains and thought they were warriors, and were afraid to attack and went back to Kusaie.

PONAPE BETRAYED BY A WOMAN

"Ijokelekel came again in his canoe with 333 men and circled the island. Each day, from a distance, they saw the palms and were afraid to come closer but went home a second time. When he came a third time he went only half way around the island and put the canoe into the harbor at Ronkiti. He sent some of his men ashore. Their instructions were:

Photograph from Junius B. Wood

WOMEN OF TOMIL, YAP, WEARING THE NECK ORNAMENT MADE FROM THE HIBISCUS

Every woman and marriageable girl wears this ornament, which is dyed black, and to appear without it would be immodest. The wide, full skirts, made of the leaves of the coconut tree, prove quite convenient go-carts for the babies.

"'If you see any people ashore and there is an old woman among them, run back to the canoe, for I will go ashore and stay with her tonight.'

"Soon the men came running back, saying they had seen an old woman. Ijokelekel went ashore and found her. That night, as they talked, he said:

"'There are many warriors in Ponape.'

"The old woman replied that there were few men, but many women on the islands, and that the warriors from Kusaie should stay and make their homes there.

"'But I have seen your warriors standing by the thousands on the mountain tops,' said Ijokelekel.

"Then the old woman, proud to show her knowledge, as all women are, laughed at him and answered:

"'They are only palms, and what you think are the waving spears of the war dance are only their branches blowing in the breeze.'

Photograph from Junius B. Wood

THE GRASS SKIRT IS NOT PECULIAR TO THE "HULA HULA" GIRL

These ladies of Korror, in the Palao Islands, are wearing the typical skirts, consisting of a front and back piece, made from the stems of a native plant. The debutante announces that she is "out on the carpet" by assuming a narrow belt of plaited leaves or of colored yarn like the neck-cords worn by the women of Yap (see illustration on opposite page).

"Tjokelekel had learned what he wanted. He ran back to the canoe and they paddled around to Nanmatal. At daylight they attacked the city. Here is where they left the canoe.

"Jauteleur, a great warrior, led the men of Ponape. They fought for two days, and each night the warriors from Kusaie were beaten back to their canoe.

"On the third day Jauteleur was again pushing back the strangers when one of the warriors from Kusaie drove a spear through his own foot, fastening it to the ground. The other warriors, who were running away, saw that their comrade stayed to fight, and came back to help him. They captured the city."

NANPARATAK, THE PONAPE ARCHILLES

My host stopped, lost in reverie, dreaming the romance of those stirring days. Civilization, with its laws and conven-

A TYPICAL NATIVE HOUSE AT KORROR: PALAO ISLANDS

Inside the stone platform in front of the dwelling the family dead are buried. Each household has its own cemetery.

Photographs from Junius B. Wood

THE CLUB-HOUSE AT KORROR, SEAT OF GOVERNMENT OF THE PALAO ISLANDS

This house was at one time a village, but the German governor had it moved opposite his office, where it stands today. Its remarkable appearance, both the inside and outside being extensively carved, has remained unaltered.

Photograph from Junius B. Wood

A MEETING OF THE "BIG CHIEFS" OF THE PALAO ISLANDS ON KORROR

He of the helmet is the Aybathul, a chief of first rank and practically king of the Palaos. He and one other member of the group are wearing bracelets of bone, symbols of dignity. The handbag of plaited leaves carried by each chief is the Palao equivalent of a cigarette case or tobacco-pouch, for it contains the "makings" for betel-nut chewing.

tionalities of distant lands, has substituted work and worry for that care-free life. This man, a native leader, was interpreter for the Japanese chief of police. He might have been an Ijokelekel or a Jauteleur in another age.

"I have forgotten the name of the soldier who won the fight," he said, lapsing again into silence.

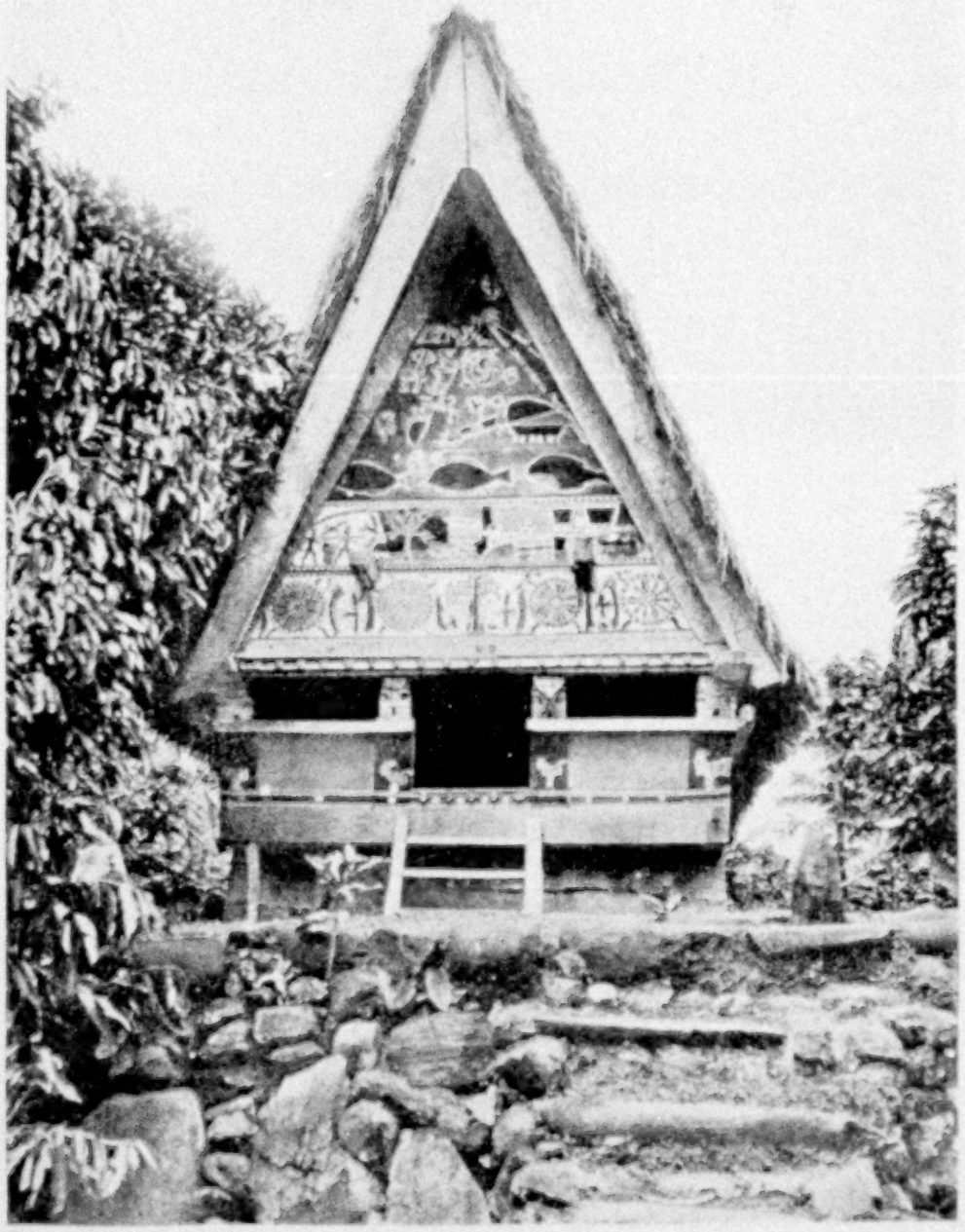
The name wouldn't come. He called in the rough Ponape dialect. The light step of bare feet came along the narrow porch. Leaning over the low wall was a woman, bare from the waist up, straight-featured, with threads of gray in the smooth black hair, sharp-eyed and strong-muscled, as if a bronze Venus of fabled Nanmatal had been conjured into the dim light of the flickering lantern. Without raising his head, the man spoke in their native language.

"Nanparatak," she said. Homer would have picked a better name for the South Seas Achilles. I wrote it down while the jargon was fresh. When I looked again the dusky vision had disappeared as silently as the mythological Helen of Troy. The legend of Greece and that of Ponape have strange points of similarity.

"Jauteleur and Soutolour were killed, and Ijokelekel divided Ponape into five tribes, just as they are today," he resumed. "But they did not live in either of the cities, for the gods who had built them were angry. Nobody has lived in them since, and when people go to them it rains and thunders, for the gods do not want them to be disturbed. Nobody has disturbed them since the German governor died."

A DANCE ON PONAPE, CENTER OF THE JAPANESE MANDATORY ISLANDS

On another day the natives gave a dance. It was a good show, but, considering the elaborate preparations and number participating, sadly abridged and expurgated. Saddened by the march of events in America, somebody wrote, "You Cannot Shimmy on Tea," and probably the same applies to the South Seas. The League of Nations very wisely specifies



Photograph from Junius B. Wood

THE COUNCIL-HOUSE OF KORROR CHIEFS: PALAO ISLANDS

The building, which is placed on a structure of stones about four feet above ground level, is ornamented inside and out with pictorial carvings painted white, red, black, and yellow. The ordinary villagers, and especially the women and girls, are strictly forbidden to darken its doors.

prohibition for all the natives in its mandated possessions, but a reasonable ration on dancing days would undoubtedly put more "pep" into the performances. Nobody became overheated on this afternoon. At that, it was the best dance seen on any of the islands (see pp. 590-592).

Ponape is about the center of the Japanese mandatory islands. Its life and customs may be taken as a standard for all the others. Those who have passed their lives along this border of the Equator say it is the cleanest, healthiest, and happiest. Conditions and habits vary in the others; some are better and some are worse, according to the individual tastes.

Each group of islands has a language of its own. The years are not long past when each was a petty kingdom, and the stranger cast up on its shores was hailed as a gift from the gods, whose head quickly adorned the door post of the first islander to greet him.

The extent of American missionary activity can be gauged by the length of the women's skirts. In Yap, which missionary influence has hardly touched, the fluffy fiber upholstering clings precariously on the fat hips. In the Marianas and middle Carolines, skirts start above the waist-line. In Kusaie, the easternmost of the Carolines, they reach to the shoulders in one-piece wrappers. In the Marshalls, where the missionary work has flourished without interruption, the long-trained wrappers, sweeping up the dust, are further ornamented with high ruffle collars and wrist-length sleeves.

YAP VISITED BY A SERIES OF DISASTERS

The native of Yap is little concerned over the controversy which is waging in other parts of the world as to who shall rule his rocky home. Just now, his chief worry is to get enough to eat. War and the elements have completed the blight which has cursed the islands for a decade. When the English cruiser sailed past and shelled the wireless station out of existence, and a few weeks later a Japanese transport

arrived and deported the foreigners, including the solitary policeman, the islander's chief source of income was gone.

The final blow came on December 7, 1920, when a typhoon leveled the vegetation on the islands, destroying most of the coconut palms, breadfruit trees, and other food supplies. The last previous typhoon had been on February 20, 1895.

About the time the new coconut trees were ready to bear, one of those strange plant sicknesses of the tropics spread over the island. The new groves, which had been patiently planted, were just coming into fruit when the last typhoon wiped out everything.

To everybody in the world except the islander himself, the location of Yap is of importance. It is about 250 miles east of Palao, the future Japanese naval headquarters of the mandate, which is some 500 miles east of the Philippines, about opposite Mindanao.

Photograph from Junius B. Wood

A SHRINE ON KORROR: PALAO ISLANDS

This structure, three feet wide and six feet high, is a miniature replica of the club-house shown on the opposite page. Though it is a place of worship, it contains no idol or image.

YAP ISLANDERS WERE LEADERS

Like the other forty-eight so-called islands in the Carolines, Yap is not a single island, but a cluster of small islands. There are ten islands in the group, four of which are fairly large and volcanic, all surrounded by a coral reef about 15 miles long and 4½ miles across at its widest point. Epp, the native name for Yap, is the largest of the four. North of it, and separated by narrow straits, are Torei, Map, and Rumong. Tomil is the name of the harbor and settlement, with a good anchorage, reached by a narrow passage and past dangerous rocks.

In native civilization, the islanders of Yap were the leaders and teachers for all the others. Most of the legends and customs of the old days can be traced back to Yap. Some islands improved on their lessons, others never advanced beyond crude imitations.

Stories are told of men from Yap coming in their canoes as far as the Marshalls, more than 2,000 miles away. They taught the others navigation. In the Marshalls, where the little low-lying patches of sand and coral are close together, they im-

Photograph by Junius B. Wood

TRAVELING A LA MODE IN SAIPAN: MARIANA ISLANDS

Taking an afternoon drive on some of the South Sea Islands combines all the leisurely and luxuriant features of an airing for some people in some portions of the United States.

XUM

Photograph by Junius B. Wood

"LET THE WOMEN DO THE WORK," IS THE SLOGAN IN ROTA: MARIANA ISLANDS

The little girls keep the street around the school-house clean by sweeping it during the recess period, while the boys go out to play.

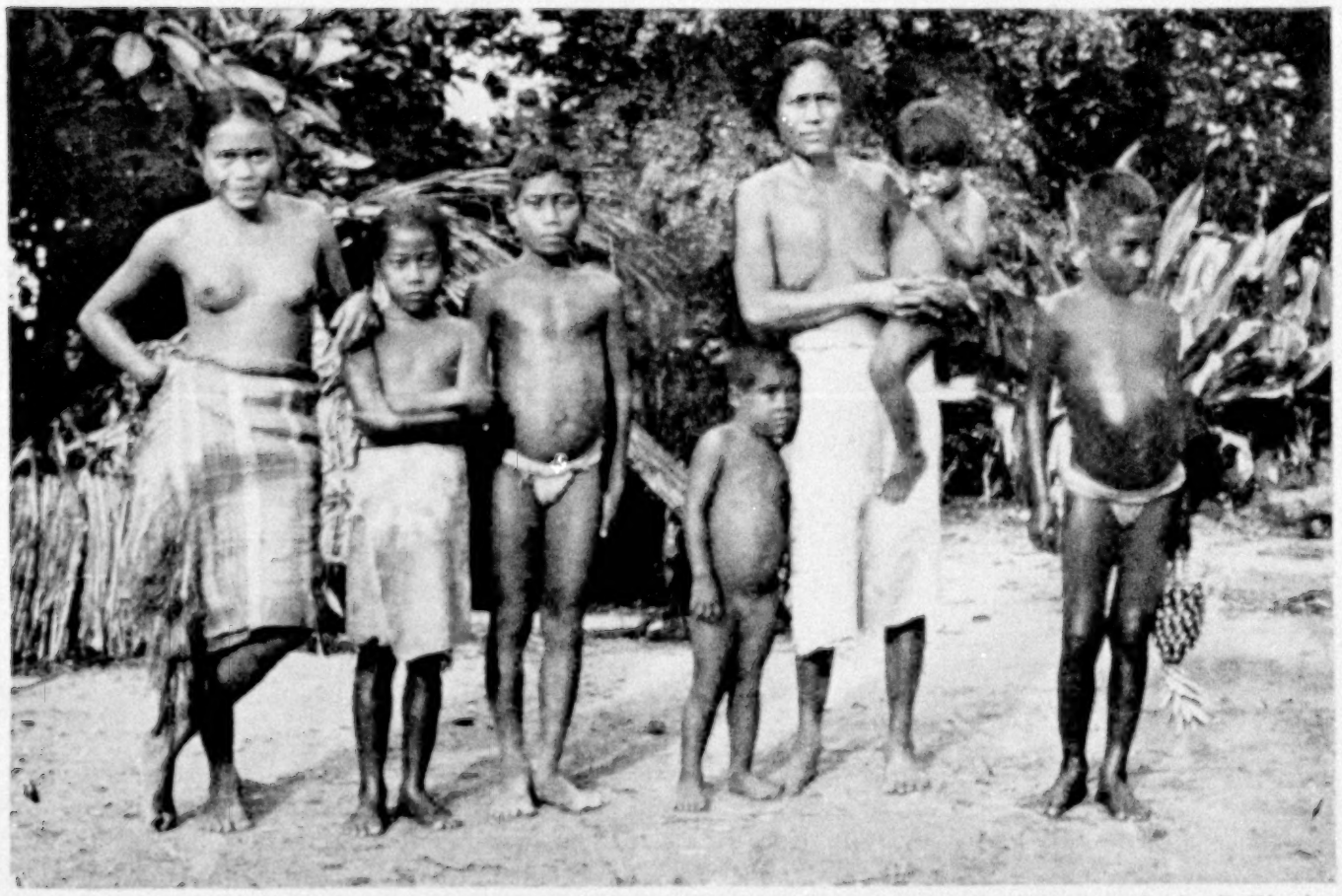
STUDENTS OF READIN', 'RITIN', AND 'RITHMETIC IN ROTA: MARIANA ISLANDS

The slate is the private property of the pupil, while the text-books belong to the school.

Photographs by Junius B. Wood

THE SCHOOL AT JALUIT CONDUCTED BY THE JAPANESE AUTHORITIES

The pupils are obliged to remain for at least three years of instruction. Jaluit is the chief island and administrative center of the Marshall group.



Photograph by Junius B. Wood

A FAMILY GROUP IN SAIPAN: MARIANA ISLANDS

A sudden shower drove the photographer into a hut, where the family courteously received him, and to show their hospitality sent the oldest boy off to pick a pineapple for him. The mother was sitting upon the sleeping platform, using her spare moments in braiding a crude basket.

proved on the knowledge of the men of Yap until the seamanship of the old Marshall chiefs, sailing unerringly without compasses, reading the waves by day and the stars by night to lay their course, is a puzzle to modern navigators.

The story of the two brothers, the genesis of the legendary history of Ponape, is told with variations of names and incidents to suit the local dialects and events in the Marshalls and other islands. The brothers are supposed to have come from Yap. The Yap natives built houses, towering structures for that part of the world. In Palao, to the westward, they improved on the architecture of Yap, while as one travels eastward to the Marshalls the structures become of decreasing simplicity.

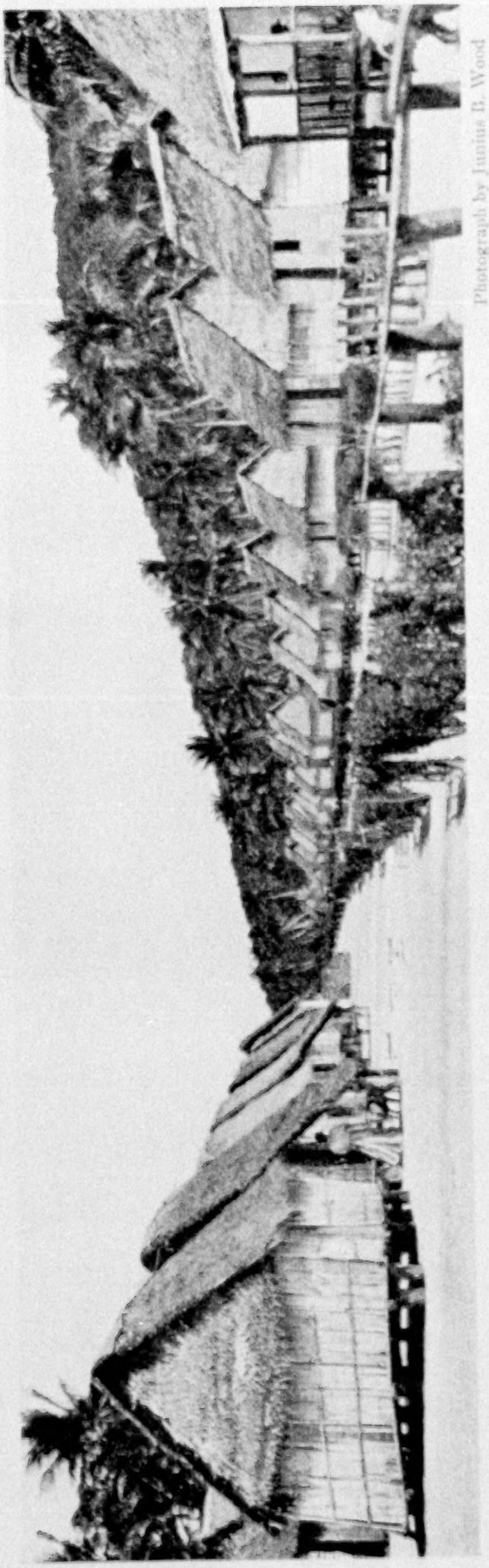
The natives of Yap knew how to make earthen bowls and cooking utensils, how to weave baskets and ornaments, and how to dye the fibers various colors. They had houses where only the chiefs met, club-houses where the unmarried men lived and which all the villagers could enter on certain occasions, and canoe-houses for the use of all. The same custom prevailed on the other islands.

In Yap the women cultivated the taro beds, and on the other islands they did the fishing. All agreed that the women should do the work and the men the fighting and loafing. With the advent of ships and trading, the men now work and the war canoes are leaking and decaying.

AN ISLAND OF STONE MONEY

Yap had a currency of its own—big circles of yellowish limestone which nobody could steal and smaller pieces of pearl shell with squared edges. They were brought from Palao, which gave them an intrinsic value. However, just as they discarded the fire-stick when matches were obtainable, the crude money is no longer used, except as ornaments or to sell to curio-collectors.

The big money resembled a flat grist-mill wheel with a hole in the center, so two men could carry it on a pole. Pieces four feet in diameter are numerous, and



Photograph by Junius B. Wood

MAIN STREET IN A VILLAGE OF ROTA: MARIANA ISLANDS

All the houses are elevated above the ground and have small windows under the overhanging thatch roofs, some of which extend out beyond the house to form a sort of porch. The woman in the foreground has spread mats on the sidewalk and is drying cocoa beans.

I was told that one wealthy and exclusive club had an 11-foot coin, but I could not find it. About two feet is the usual size. A three-foot coin could purchase a young pig; so the fortune-hunter could take his choice of paddling to Palao to quarry a piece of loose change and risk drowning while returning home, or of carefully raising a shoat.

The money, leaning against the elevated stone platforms of the clubs or homes of leading citizens, is practical as well as ornamental. The number and size of the piece mark the building's financial standing, and when visitors come they sit on the stone pavement, resting their backs against the stone cart-wheels, as they leisurely discuss club politics or the latest escapades of the village slave girls. The smaller shell money is now used for necklaces (see page 611).

Some of the club-houses in Yap are more than 100 feet long and 30 feet wide, built on platforms of rough stone paving. The roofs are striking—high and narrow, with the gable longer than the eaves, so that it projects several feet on each end. A similar type of architecture is followed in the more pretentious homes.

Posts and beams of the club-houses are carved and painted, usually in red, black, and white, with scenes historical of events on the island. In Palao, the club-houses are even more elaborate, the favorite ornamentation being a rude figure of a profusely tattooed woman straddling the door, as a warning to the village maidens to be circumspect. The natives' houses also are partitioned in a way, at variance with the usual one-room publicity.

THE WOMEN WEAR SMALL "HAYSTACKS"

The natives have built good roads in Yap, in most places well paved with stones. The women do all the work around the homes, but the men are sturdy workers and more

efficient than those on any other of the islands.

Though they are anchored rather low, the skirts of the Yap women are longer than those of any other wearers of the garments of palm fiber and hibiscus bark. They reach to the ankles and are so full and fluffy that they look like small haystacks. The more fancy ones are dyed variegated colors (see page 612).

In Palao the women wear a double short skirt. The men of Yap wear a short shirt of the inner bark of the hibiscus over their loin-cloth, while those in Palao usually dispense with it. In a part of the world where the mother's hip serves as a baby carriage, the full skirt of Yap makes a convenient seat for the youngster. Even the smallest girls wear skirts.

Possibly the most important part of a Yap woman's apparel is a neck-string of thin native cord. This she puts on as soon as she is of marriageable age. Nothing else is worn above the waist, and it is considered brazenly immodest for a woman to appear without the cord around her neck. A long, thin comb of wood, which the men wear in their hair, shows similar distinction. A man's rank or standing in the community is indicated by the length of his comb. Some measure 18 inches.

Many learned pages have been written on whether the Yap natives, with their ingenuous ways, sufficient for their simple needs, or the Marshall islanders, with a semblance of Western customs imposed on their old habits and tropical atmosphere, are the more civilized. They are extremes geographically as well as extremes between the old and the new. The missionaries say that the Marshall islanders are both civilized and Christians.

TWENTY YEARS WITHOUT A MURDER IN THE MARSHALL ISLANDS

The Marshalls are proud of their record of twenty years without a murder and very few cases of theft. That is more than any American city of equal population and farther removed from days when head-hunting was popular can boast. The missionaries have taught the natives that they must not smoke, dance, play cards, cook on Sundays, drink liquor, or indulge in various other relaxations which are not considered an eternal bar to godliness in other lands. Calisthenics were abolished in the mission schools because the movements suggested the dances of their forefathers to the young people. As all these restrictions economize physical effort, the natives willingly accept them.

On the other hand, the population is said to have diminished 50 per cent in as many years, and the medical officers at the free hospital say that 90 per cent of their patients have venereal diseases and 60 per cent are also suffering with *frambesia tropica*, otherwise known as "yaws," which might be avoided if the rudiments of hygienic cleanliness were observed.

THE ANCIENT DANCE IS NO MORE

Though there is little to disturb their lassitude, the Marshall islanders are happy and contented. Most of them sit around their houses all day, have a song service in the evening, and then go to sleep.

Walk past a native house almost any hour of the day and two or three men or women can be seen lying on their backs in the cool interior. They will lazily roll their heads to look through the windows, opening on a level with the ground, to see who is passing, but more than mere curiosity is needed to dislodge them from their braided mats. It has been so long since there has been anything much to do that they have gotten out of the habit.

They do not have the vigor of their forefathers, when the men, working themselves into a frenzy in the war dance, dashed to their canoes to battle with the people of a neighboring island. Those were the days when the women danced the wild *rü-ong*, whose sinuous gyrations were the sensation of the South Seas. Four years of training, until her backbone was as flexible as a snake's, were required before a girl was permitted to join in this dance. In those days, to avoid argument, children traced their name and ancestry to their mother.

The chiefs and most of the men who have been educated in the mission schools have added a familiarity with foreigners

Photograph by Junius B. Wood

A BEACH PARTY ON SAIPAN: MARIANA ISLANDS

The original natives of Saipan were driven out of the island in 1815, but later it was repopulated by Chamorros and Caroline islanders.

and business methods to their native shrewdness. Many of them speak English, and, with their innate love of politics, deluge the visitor with questions on the outside world and international affairs, some of which are too complex for the ordinary traveler.

The years of missionary teaching in the islands have made the natives a peaceful, friendly, and hospitable people, and their even longer association with American and later Australian, German, and Japanese traders has given them a knowledge of values. It has been many years since a pink comb could be traded for a cask of coconut oil in the Marshalls.

"Yak we yuk" is the invariable greeting from man or woman. The salutation, "Love to you," may be taken to symbolize their daily spirit. They have seen much of Americans—rough sailors with pirate instincts, fighting and robbing; others who married their daughters and settled in the islands, and, finally, the gentle missionaries, who built schools and churches. America has taught them much, and they dream of America, far across the Pacific, as their adopted country.

"WHAT IS HAPPENING IN AMERICA?"

Possibly it is a chief, or a native preacher, or a man or woman who has studied in one of the mission schools, who always calls when an American visits one of the islands. A present of a gaily bordered mat, an assortment of artistically woven fans, a fish-hook made from shells, or some other native handicraft is always brought. And when the visitor leaves the baskets of fresh coconuts which are sent aboard his ship will quench his thirst for many days.

As clothes have become popular, tattooing has disappeared. Once a chief was tattooed from ears to waist, in fine lines of many designs, entirely different from the broad stripes of the Carolines. "Chief Moses" is the only survivor of that age, and though he now wears a high collar, his cheeks are lined as if they had been branded with an electric toaster.

Lebario, with nine atolls under his control, is another of the old chiefs, a grim, serious-minded man, whose life has registered all the changes in the Marshalls. My first sight of him was at Wotje. He was busily dictating a contract to his stenographer, a fat, middle-aged man with an ancient but effective typewriter. The captain of the Australian trading schooner was waiting to sign it, and Lebario was in a hurry, as the bimonthly ship sailed for Jaluit in a few hours and he must catch it. However, he had time to stop all work and ask the invariable question, "What is happening in America?"

EVENINGS AT THE "CLUB" IN THE MARSHALL GROUP

Dramatic stories are told of the early days, only half a century ago, before the Marshall islanders became pupils of the Western World. Then these low-lying islands—more than 300, grouped into 32 circular atolls, with a total land area of only 156 square miles—were a world of their own, each atoll having its chief and usually at war with all its neighbors.

More than one night, when the moonlight was silvering the beach and the rest of the settlers slept, we sat until morning in the cabin of Joachim De Brum while old men reminisced of their boyhood.

Legends which their fathers handed down to them, love romances of island Cleopatras, and daring deeds of bold chiefs, stories of the rough characters who had come in later days, whispered locations of still buried treasures of tortoise-shell and gold, arguments of crops and prices of today—all were mixed in an incongruous medley. And, much like clubdom the world over, a sleepy boy would appear with an armful of coconuts, the "eyes" deftly extracted, for story-tellers and audiences always are thirsty.

De Brum is a remarkable character. Born on the islands, son of a Portuguese trader and native mother, subscriber to an American daily newspaper and several magazines, he keeps in touch with the greater world thousands of miles away, though the mail steamer never comes oftener than once in two months.

VALUABLE COPRA CROP PRODUCED BY THE MARSHALL ISLANDS

Life in the Marshalls today is denaturized and commercialized. The transformation came quickly, once it started. Though they were discovered by de Saavedra in 1529 and explored by Captain Marshall in 1788, it was not until 1886

Photograph from Junius B. Wood

GIRLS OF THE CHAMORRO TRIBE IN SAIPAN: MARIANA ISLANDS

The Chamorros are not of the same stock as the natives of the Carolines, but are probably allied with some of the Philippine tribes. They dress in European style and show a preference for white clothes. They also wear leather sandals, a style not common to any other South Sea islanders under Japanese control.

that Germany took possession of them as a colony.

In a part of the world where men's wealth is measured by coconut trees, the Marshalls are a valuable asset to any country. They produce more than half the copra from the Japanese mandatory. Each island is a waving crown of palms. Periodically the fierce typoons strike this or that atoll, leveling the trees, decimating the inhabitants, or even lifting an entire island from its shallow bed on the coral reef, but the total producing power of the group is hardly affected. In five or six years new trees have grown, and those of the inhabitants who temporarily migrated in search of food and shelter return to their home island.

While the Marshalls are entirely low coral islands, the Carolines are both volcanic and coral and the Marianas are entirely basaltic, five of the Marianas—fifteen in number when Guam is included—having active volcanoes. One diligent statistician has located 680 islands in the Carolines, divided into forty-eight clusters. These latter are what show on maps as individual islands.

PLETHORA OF NAMES FOR EACH ISLAND

Truk or Ruk, meaning "mountain" in the native language, where the Japanese naval headquarters administering the mandatory is located for the present, is the largest of the clusters. It consists of eleven volcanic islands, one of which is four miles across, and some 80 coral islands, most of them extremely small, all surrounded by a roughly circular reef 35 miles in diameter. About half the little islands are on this reef, and the remainder are scattered in the big lagoon, which can be navigated by the largest ships (see map, page 648).

The Japanese have followed the practice of the men of other nations, who ruled for a day or a year over the islands, and have given Truk a new crop of names. Nearly every island in the Carolines has a Portuguese, Spanish, Russian, French, English, American, or German name in addition to its assortment of native titles.

Photographs by Junius B. Wood

FISHING IN DEEP WATER IN A WRAPPER AND A LARGE CONICAL HAT MUST HAVE ITS COMPLICATIONS

Since being introduced to this passé garment of civilization, the native women make peculiar use of it. They can scarcely be persuaded to dispense with it when they go fishing. In some of the islands they keep it strictly as a town gown, which they don on the road when they get in sight of the houses of the settlement (see text, page 599).

Mariners' charts, compiled mostly from data of the American missionary schooner *Morning Star* or English surveys, are fairly impartial to all nations, but many other names are used by sojourners in the islands.

Though they show as yet only on official communications, the Japanese have renamed the eleven larger islands in Truk after the seven days of the week and the four seasons, those on the reef after signs in astrology and palmistry, and the small ones inside after flowers.

The three groups in prehistoric ages may have formed parts of two mountain ranges of which the peaks still are above the waves in the Carolines and Marianas, while only the encircling reef of the tireless coral remains in the Marshalls.

The natives of the Marianas differ physically from the natives in the Carolines and Marshalls. Many show traces of European blood and their language includes expressions from the Tagalog and Spanish of the Philippines, possibly traced to the days when Spain ruled the islands. Many of their homes in Saipan are large and comfortable, in European style, with pianos and other furniture which is not found farther south.

The Kanakas, as the natives of the Carolines and Marshalls are called, who also are in Saipan, retain their native customs — absence of clothes, chiefs' houses, dances to the full moon, and an entirely lower plane of existence.

Tribal wars, with victories measured in the number of warriors' heads and women captured, mixed the blood on the islands long before the white men came, and since that time migration has been easy and safe, until racial characteristics are blended and indistinct.

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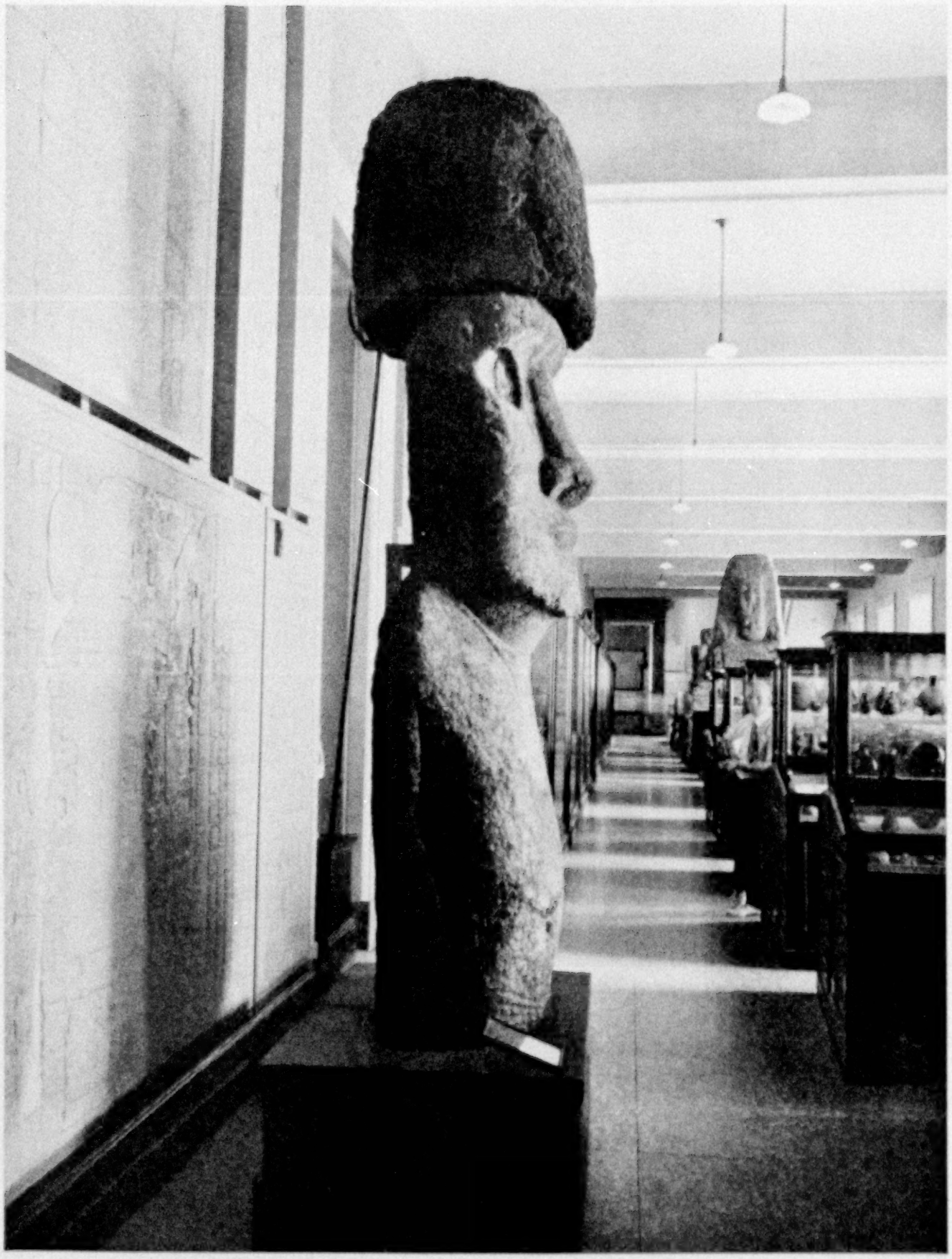

Photograph Courtesy of U. S. National Museum

ONE OF THE STONE IMAGES FROM EASTER ISLAND

The Easter Island images are the most interesting of archeological enigmas. There are more than 600 on the island. Formerly many of them stood in groups of from 6 to 12 on platforms of hewn stone facing the sea. They were hewn out of volcanic tufa and transported, sometimes three or four miles, to their destination. The island is almost treeless, and the wonder is how the image-makers could remove objects so fragile as these, weighing from three to thirty tons each, over ground so rugged. The images exhibited in the U. S. National Museum were secured during a 12-day visit to the island in 1886 by the U. S. Ship *Mohican*, under Commander B. S. Day, U. S. N.

THE MYSTERY OF EASTER ISLAND

By Mrs. Scoresby Routledge

*With Illustrations from Photographs by Members of the Author's Expedition**

"ALL the seashore is lined with numbers of stone idols, with their backs turned towards the sea, which caused us no little wonder, because we saw no tool of any kind for working these figures."

So wrote, a century and a half ago, one of the earliest navigators to visit the Island of Easter, in the southeast Pacific.

Ever since that day passing ships have found it incomprehensible that a few hundred natives should have been able to make, move, and erect numbers of great stone monuments, some of which are over thirty feet in height; they have marveled and passed on.

As the world's traffic has increased, Easter Island has still stood outside its routes, quiet and remote, with its story undeciphered.

What were these statues of which the present inhabitants know nothing? Were they made by their ancestors in forgotten times or by an earlier race? Whence came the people who reached this remote spot? Did they arrive from South America, 2,000 miles to the eastward, or did they sail against the prevailing wind from the distant islands to the west? It has even been conjectured that Easter Island is all that remains of a sunken continent.

Fifty years ago the problem was increased by the discovery on this mysterious land of wooden tablets bearing an unknown script; they, too, have refused to yield their secret (see page 646).

HOW TO REACH EASTER ISLAND

When, therefore, we decided to see the Pacific before we died, and asked the anthropological authorities what work there remained to be done, the answer was, "Easter Island."

It was a much larger undertaking than had been contemplated; we had doubts of our capacity for so important a venture; and at first the decision was against it, but we hesitated and were lost.

Then followed the problem, how to reach the goal. The island belongs to Chile, and the only regular communication, if regular it can be called, was a small sailing vessel sent out by the Chilean Company, which uses the island as a ranch. This vessel went sometimes once a year, sometimes not so often, and only remained there sufficient time to bring off the wool crop.

We felt that the work on Easter ought to be accompanied with the possibility of following up clues elsewhere in the islands, and that to charter any such vessel as could be obtained on the Pacific coast, for the length of time we required her, would be unsatisfactory, both from the pecuniary standpoint and from that of comfort. It was therefore decided, as my husband is a keen yachtsman, that it was worth while to procure in England a little ship of our own, adapted to the purpose, and to sail out in her.

NO SHIP TO BE FOUND, ONE IS BUILT

Search for a suitable vessel in England was fruitless, and it became clear that to get what we wanted we must build. The question of general size and arrangement had first to be settled, and then matters of detail. It is unfortunate that the precise knowledge which was acquired of the exact number of inches necessary to sleep on, to sit on, and to walk along is not again likely to be useful. The plans were completed for a vessel of schooner rig and auxiliary motor power. The length over all was 90 feet and the water line 72 feet; her beam was 20 feet. The gross tonnage was 91 and the yacht tonnage was 126.

While the plans were being completed, search was being made for a place where the vessel should be built; for, though nominally a yacht, such finish and build would have been out of place. It had been decided that she should be of wood,

*A more detailed account of the findings of the Routledge Expedition will be found in the fascinating and handsomely illustrated volume, "The Mystery of Easter Island," by Mrs. Scoresby Routledge, sold by Sifton, Praed & Co., London.

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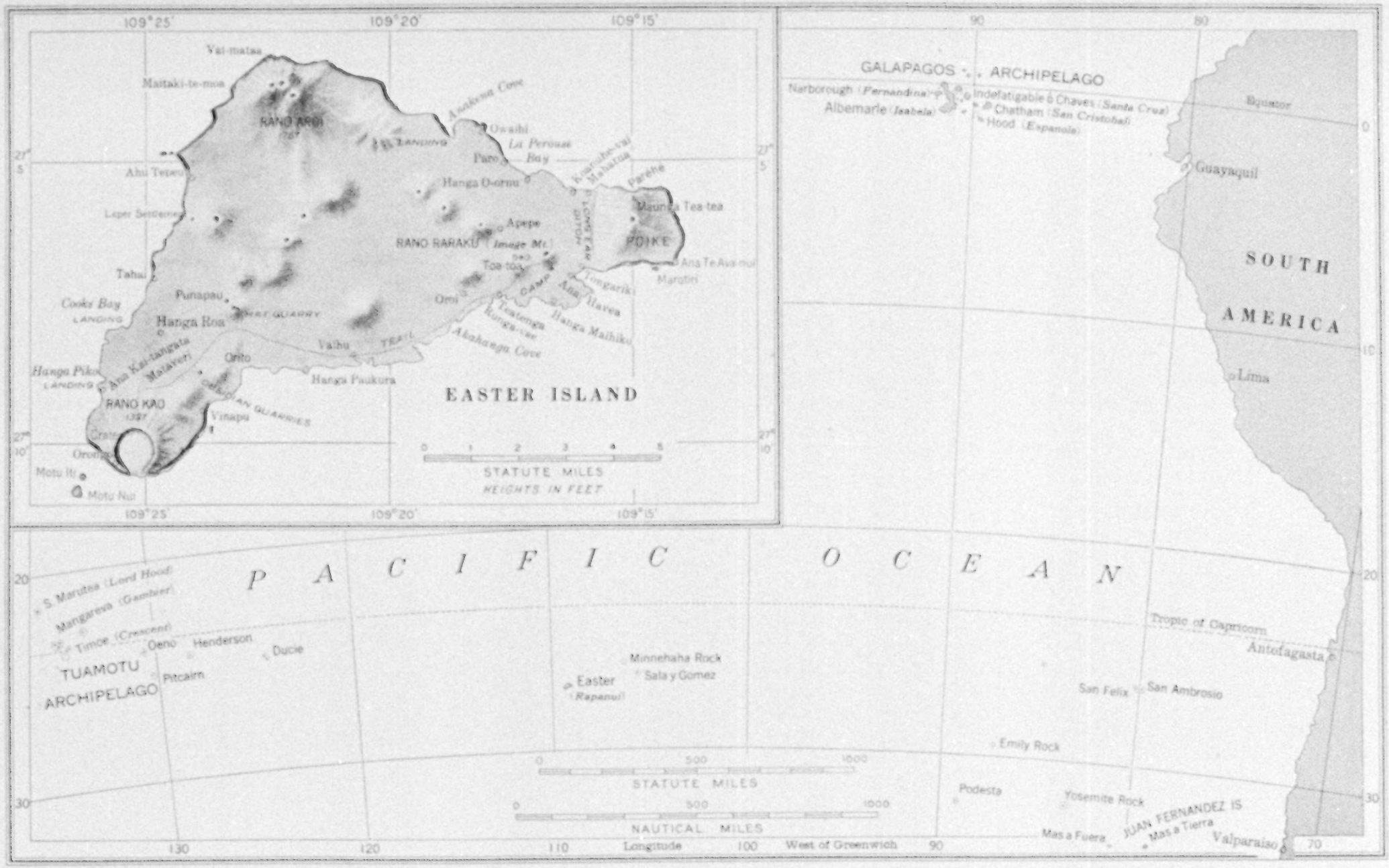

Drawn by A. H. Bumstead

A MAP OF EASTER ISLAND

Easter Island lies more than 2,000 statute miles west of the nearest point on the South American coast and nearly 1,000 miles east of the most easterly of the Tuamotu Archipelago (see large map supplement with this number of THE GEOGRAPHIC). It is of volcanic origin and has an area of about 50 square miles. The ahu designated on the coast-line are the burial platforms on which stood many of the island's mysterious stone images (see page 636).

as easier to repair in case of accident, where coral reefs and other unseen dangers abound; but the building of wooden walls had practically ceased.

The west country was visited and an expedition made to Dundee and Aberdeen; but even there, the old home of whalers, ships are now built of steel. Finally we fixed on Whitstable, from which place such vessels still ply round the coast.

THE SHIP IS CHRISTENED THE "MANA"

The keel was laid in the autumn. The following spring we took up our abode there to watch over her, and in May she first took the water, being christened by the writer in approved fashion: "I name this ship *Mana*, and may the blessing of God go with her and all who sail in her"—a ceremony not to be performed without a lump in the throat.

The choice of a name had been difficult. We had wished to give her one borne by some ship of Dr. Scoresby, the Arctic explorer, a friend of my husband's family, whose name he received; but none of them proved to be suitable.

The object was to find something which was both simple and uncommon. All appellations that were easy to grasp seemed to have been already adopted, while those that were unique lent themselves to error.

"How would it do in a cable?" was the regulation test. Finally we hit on *Mana*, which is a word well known to anthropologists and has the advantage of being familiar throughout the South Seas.

We generally translated it, somewhat freely, as "good luck." It means, more strictly, supernatural power. A Polynesian would, for instance, describe the common idea of the effect of a horseshoe by saying that the shoe had "mana." From a scientific standpoint, mana is probably the simplest form of religious conception.

. . . . . .

EASTER ISLAND SIGHTED AFTER A VOYAGE OF 13 MONTHS

Easter Island at last! It was in the misty dawn of a Sunday in March that we first saw our destination, just one week in the year earlier than the Easter Day it was sighted in 1722 by Roggeveen and his company of Dutchmen. We had been twenty days at sea since leaving Juan Fernandez (Robinson Crusoe's Island), giving a wide berth to the few dangerous rocks which constitute Sala y Gomez and steering directly into the sunset.

It was thirteen months since we had left Southampton, out of which time we had been 147 days under way, and here at last was our goal. As we approached the southern coast we gazed in almost awed silence at the long gray mass of land, broken into three great curves and diversified by giant molehills. The whole looked an alarmingly big land in which to find hidden caves.

The hush was broken by the despairing voice of Bailey, the ship's cook. "I don't know how I am to make a fire on that island; there is no wood!" He spoke the truth; not a vestige of timber or even brushwood was to be seen.

THE FIRST MEAL ON EASTER ISLAND

We swung round the western headland, with its group of islets, and dropped anchor in Cooks Bay. A few hundred yards from the shore is the village of Hanga Roa, the native name for Cooks Bay. This is the only part of the island which is inhabited, the 250 natives, all that remain of the population, having been gathered together here in order to secure the safety of the live stock, to which the rest of the island is devoted.

The yacht was soon surrounded by six or seven boat-loads of natives, clad in nondescript European garments, but wearing head-coverings of native straw, somewhat resembling in appearance the high hat of civilization.

The manager, Mr. Edmunds, shortly appeared, and to our relief, for we had not been sure how he would view such an invasion, gave us a very kind welcome. He is English and was, to all intent, at the time of our arrival, the only white man on the island; a French carpenter, who lived at Hanga Roa with a native wife, being always included in the village community.

Mr. Edmunds' house is at Mataveri, a spot about two miles to the south of the village, surrounded by almost the only trees on the island; immediately behind it rises the swelling mass of the volcano Rano Kao (see map, page 630).

The first meal on Easter Island, taken

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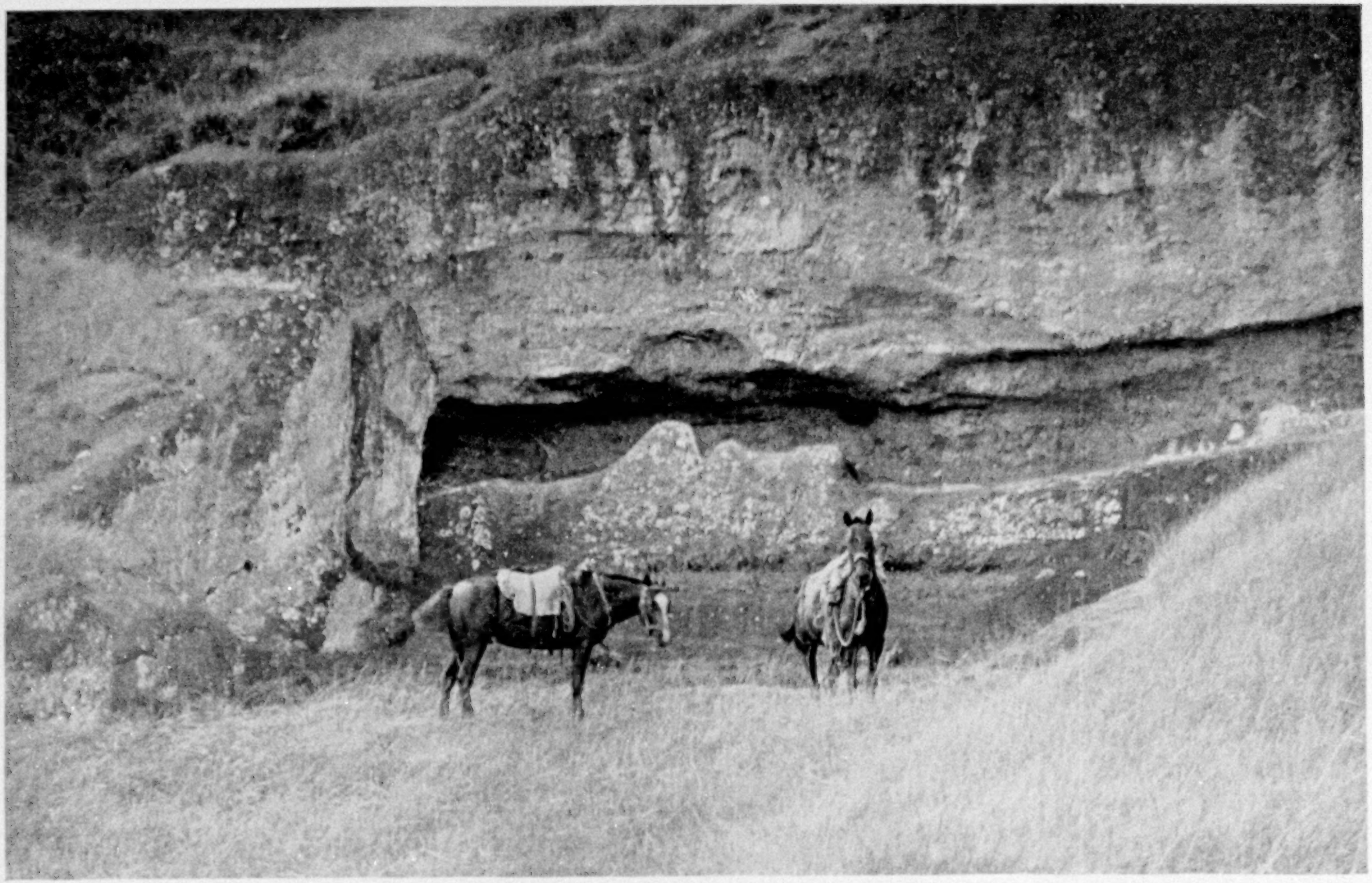

A PARTIALLY SCULPTURED IMAGE IN ONE OF THE QUARRIES ON RANO KAO VOLCANO: EASTER ISLAND

The quarry statues on Easter Island, in various stages approaching completion, number 150. The surface of the rock which was supposed to furnish the figure had generally been laid bare before work upon it began, but occasionally the image was wrought lying partially under a canopy, as in the case illustrated here (see text, pages 643-645).

STANDING STATUES ON RANO RARAKU VOLCANO: EASTER ISLAND

Every statue here is buried in greater or less degree, but while some are exposed to the elbow, only a portion of the head is visible in other cases. Still other images probably are completely covered and remain to be excavated. Note the rope-like ear (see also illustration on page 634).

TWO STATUES ON THE SLOPES OF RANO RARAKU

The image in the foreground shows clearly one of the remarkable features of these statues—the lobe of the ear—which, in general, is depicted as a fleshy rope.

here with Mr. Edmunds, remains a lasting memory. It was a large, plain room with uncarpeted floor, scrupulously orderly; a dinner table, a few chairs, and two small book-cases comprised the furniture.

The door on to the veranda was open, for the night was hot, and the roar of breakers could be heard on the beach, while near at hand conversation was accompanied by a never-ceasing drone of mosquitoes.

The light of the unshaded lamp was reflected from the clean, rough-dried cloth of the table round which we sat, and lit up our host's features, the keen brown face of a man who had lived for some thirty years or more, most of it in the open air and under a tropical sun.

He was telling us of events which one hardly thought existed outside magazines and books of adventure, but doing it so quietly that, with closed eyes, it might have been fancied that the entertainment was at some London restaurant and we were still at the stage of discussing the latest play.

"This house," said our host, "was built some fifty years ago by Bornier, who was the first to exploit the island. He was murdered by the natives. They seized the moment when he was descending from a ladder; one spoke to him and another struck him down. They buried him on the hillock near the cliff, just outside the plantation. You will see his grave when the grass is not so long; it is marked by a circle of stones.

"A French warship arrived almost immediately afterwards, the natives explained that he had been killed by a fall from his horse, and this is the version still given in some of the accounts of the island; but murder will always out.

"After that another manager had trouble; it was over sheep-stealing. There were three or four white men here at the time, and they all rode down to the village to teach the natives a lesson; but the ponies turned restive at the sound of gunfire, and the rifles themselves were defective; so the boot was on the other foot, and they had to retreat up here, followed by the mob. For months they lived in

AN IMAGE ON RANO RARAKU WITH A DISK EAR

This peculiarity of the lobe is much less common among the Easter Island images than that shown on the opposite page.

what was practically a state of siege, with one man always on guard for fear of attack.

THE STORY OF A SHIPWRECK

"My latest guests were a crew of shipwrecked mariners, Americans, who landed on the island last June. A fortnight earlier the barometer here had been extraordinarily low, but we did not get much wind; further to the south, however, the gale was terrific, and the *El Dorado* was in the midst of it.

"The captain, who had been a whaler in his day, said that he had never seen anything approaching it. The sea was simply a seething mass of crested waves.

"The ship was a schooner, trading between Oregon and a Chilean port; she was a long way from land, as sailing vessels make a big semicircle to get the best wind. She had a deck-load of timber, 15 feet high, which, of course, shifted in such a sea; she sprang leaks in every direction, and it was obvious that she must soon break up.

"The crew took to their boat, not that they had much hope of saving their lives, but simply because there was nothing else to be done. They got some tins of milk and soup on board, and a box of biscuits, and a cask holding, perhaps, twenty gallons of water. The captain managed to secure his sextant, but when he went back for his chronometers the chart-room was too deep in water for him to be able to reach them.

IN AN OPEN BOAT 700 MILES FROM LAND

"They saw by the chart that the nearest land was this island; it was 700 miles off, and, as they had no chronometer and could take no risks, they would have to go north first in order to get their latitude, which would add on another 200. There was nothing for it, however, but to do the best they could; they had more gales, too, and only saved the boat from

THE SEAWARD SIDE OF ONE OF THE EASTER ISLAND BURIAL PLACES, AHU MAHATUA

These impressive piles of stone are supposed to have been erected by prehistoric Easter Islanders as resting places for their dead. They are known as ahu and are found chiefly near the seacoast. On these burial platforms stood most of the great images that amazed the early voyagers. For the plan of their construction, see diagram, page 644.

XUM

ONE OF THE GIANT STATUES WHICH HAS FALLEN BACKWARD FROM A BURIAL PLATFORM

This ahu, at Runga-Vae, on the south coast, was undermined by the sea, causing the image to topple over.

AN EXCAVATED STATUE ON EASTER ISLAND

This unusual specimen shows the form of the hands. Here the position of the eyes is indicated by a straight line below the brow. In the images found on the terraces the sockets are always hollowed out (see illustration, page 628).

being swamped by making a sea-anchor of their blankets.

"The spray, of course, kept washing over them, and as the boat was only 20 feet long and there were eleven of them, there was no room for them to lie down. Each day they had between them a tin of the soup and one of milk and an allowance of water, but the sea got into the water-cask and made it brackish, and before the end their sufferings from thirst were so great that one or two of them attempted to drink salt water. The mate stopped that by saying that he would shoot the first man who did it.

"After nine days they sighted this island; but then luck was against them, for the wind changed, and it was 48 hours after they saw the coast before they were able to beach the boat. They got on shore at the other end of the island, which is uninhabited.

"They were pretty much at the last stage of exhaustion and their skin was in a terrible condition from salt water; their feet especially were so bad that they could hardly walk.

"One of them fell down again and again, but struggled on, saying, 'I won't give up, I won't give up.' At last my man, who looks after the cattle over there, saw them and brought me word. The officers were put up here—you must really forgive the limitations of my wardrobe, for I had to give away nearly everything that I had in order to clothe them.

"The most curious part of the whole business was that after they had been here three or four months the captain took to the boat again. I believe that he was buying his house at home on the installment plan, and that if he did not get in the last payment by the end of the year the whole would be forfeited.

"Anyway, as soon as the fine weather came on he had out the boat and patched her up. He got two of his men to go with him. I lent him a watch for navigation purposes, and we did all we could for him in the way of food; there were no matches on the island, so he learned how to make fire with two pieces of

wood, native fashion. Off he started last October for Mangareva, 1,600 miles from here [see map supplement]; he must have got there safely, for you brought me an answer to a letter that I gave him to post." *

CONDITIONS OF LIFE ON EASTER ISLAND

Easter is a volcanic land, and in the earlier days of the world's history great lights and flowing lava must have gleamed across the expanse of water, then gradually lessened and died away, leaving their work to be molded by wind and tide. The island, as the forces of nature have thus made it, is triangular in shape and curiously symmetrical.

The length of the base—that is, of the southeast coast—is about 13 miles and the greatest width about 7 miles; the circumference, roughly speaking, is 34 miles.

The apex, which is the highest ground, is a volcano having an elevation of more than 1,700 feet. Its summit is formed of a cluster of small craters; the eastern and western angles are each composed of a large extinct volcano (see map, page 630).

The place is geologically young, and the mountains, in contrast to those of Juan Fernandez, still preserve their original rounded shapes; there are no ravines, no wooded precipices, no inaccessible heights, but round the whole coast erosion is at work, with the result that, while on the land side the slopes of all these three mountains are gradual, on the sea side—that is, in portions of the north, east, and west coasts—they have been worn back by the power of the waves into imposing cliffs.

In some instances the crater of a mountain has become a lake. These lakes are almost the only water supply of the island; there is a good rainfall, but no single running stream. Owing to the porous nature of the ground, the water sinks beneath the surface, sometimes forming underground channels, from which it flows into the sea below high-water mark, thus giving rise to the curious statement of early voyagers, that the natives were able to drink salt water.†

The lower portions of the island are composed of sheets of lava, in process of disintegration, across which walking is almost impossible and riding a very slow process. The surface of the mountains and hills is smoother, being volcanic ash. The whole is covered with grass, which sprouts up between the masses of lava and gives the hills a delightful down-like appearance. Forest growth has probably never consisted of more than brushwood and shrubs, and today even those have disappeared.

A NEARLY PERFECT CLIMATE

Easter Island lies in the subtropics, and, if the question of wind be eliminated, the climate is as nearly perfection as possible in this world. There may be, especially in the winter months, a spell of three or four days of rain, or a wind from the Antarctic, when woolen clothes are welcome; and occasionally, in the summer, it is preferable to be indoors during the noontide hours; but, with these exceptions, it is one of those rare localities where it is possible to be warm the whole year round, and yet to utilize to the full the hours of daylight.

There are, as might be expected, too many insects; cockroaches abound, out of doors and under statues, as well as in houses and tents. The only consolation is that they are of a handsome, red variety and not shiny black. Flies also are numerous; I have counted two hundred in a bowl of soapy water and six or eight at once on my hand while busy writing. Mosquitoes, which had been imported, varied in their attentions. When they were at their worst, it was necessary to wear headgear and dine in gloves.

* Captain Benson and his crew made the voyage in the ship's boat to Mangareva in 16 days, and after two days' rest left in the same manner for Tahiti, accomplishing the farther 900 miles in 11 days. Mr. Richards, the British consul at the latter place, told us later of his astonishment when, in answer to his question whence the crew had come, he received the amazing reply, "Easter Island."

† In the *Journal of the Ethnological Society* the Bishop of Wellington, in his "Notes on the Maoris and Melanesians," says: "I will only add this one word about the curious way in which they get fresh water on some of the coral islands, such as Nangone, where there is none on the surface. Two go out together to sea and dive down at some spot where they know is a fresh-water spring, and they alternately stand on one another's backs to keep down the one that is drinking at the bottom before the pure water mixes with the surrounding salt water."

XUM

A STONE HAT FOR ONE OF THE IMAGES

These coverings are cylindrical in form, the bottom being slightly hollowed out into an oval depression in order to fit on the head of the image. The brim projected over the eyes of the figure—a fashion common in native head-dresses. The material of these hats is red volcanic tufa, found in a small crater of a volcano near Cooks Bay. The finished hats are from 4 to 10 feet in height, with additions of 6 inches to 2 feet for the knobs. They measure from 5½ to 8 feet across (see the hat on the image illustrated on page 628).

There is said to be no fever in the islands. We had two or three attacks, but it may have been "original sin." Once we had a plague of little white moths, and occasionally, for a short while, visitations of a small flying beetle, whose instinct seemed to be to crawl into everything, making it safer to stuff one's ears with cotton wool. On these occasions dinner had to be cooked early, owing to Bailey's pathetic complaint, that, with a lamp burning in the kitchen, business was rendered impossible from the crowds which committed suicide in the soup.

Easter Island bears no resemblance to the ideal lotus-eating lands of the Pacific. Rather, with its bleak, grass-grown surface, its wild rocks and restless ocean, it recalls some of the Scilly Isles or the coast of Cornwall. It is not a beautiful country, nor even a striking one, but it has a fascination of its own. All portions of it are accessible; from every part are seen marvelous views of rolling country; everywhere is the wind of heaven; around and about all are boundless sea and sky, infinite space and a great silence.

The dweller there is ever listening for he knows not what, feeling unconsciously that he is in the antechamber to something yet more vast which is just beyond his ken.

PREHISTORIC REMAINS OF EASTER ISLAND

In many places it is possible, in the light of great monuments, to reconstruct the past. In Easter Island the past is the present; it is impossible to escape from it. The inhabitants of today are less real than the men who have gone; the shadows of the departed builders still possess the land.

Voluntarily or involuntarily, the sojourner must hold communion with those old workers; for the whole air vibrates with a vast purpose and energy which has been and is no more. What was it? Why was it?

EXCAVATING A STATUE

The difficulty experienced by the Routledge Expedition in unearthing some of the Easter Island statues serves to emphasize the skill of the original image-makers, who apparently employed two methods in the erection of the images. By the first, the statue seems to have been placed on its face in the desired spot, and a hole was then dug beneath the base. The other method seems to have been to undermine the base, with the face of the statue lying uppermost. In several instances a number of large stones were found behind the backs of the figures, evidently used to wedge them while being raised to a vertical position.

The great works are now in ruins; of many, comparatively little remains; but the impression infinitely exceeded anything which had been anticipated, and every day, as the power to see increased, brought with it a greater sense of wonder and marvel. "If we were to tell people at home these things," said our sailing master, after being shown the prostrate images on the great burial-place of Tongariki, "they would not believe us."

The present natives take little interest in the remains. The statues are to them facts of every-day life, in much the same way as stones or banana trees. The information given in reply to questions is generally wildly mythical, and any real knowledge crops up only indirectly.

The general form of the Easter Island image is unvarying. It represents a half-length figure, at the bottom of which the hands nearly meet in front of the body. The most remarkable features are the ears, of which the lobe is depicted to represent a fleshy rope, while in a few cases the disk which was worn in it is also indicated (see pages 634 and 635).

The tallest statues are more than 30 feet, a few are only 6 feet, and even smaller specimens exist. Those on the

AHU TEPEU, A BURIAL-PLACE COMPOSED OF SHEETS OF LAVA

The first tier of the seaward wall (see diagram on page 644) is composed of huge slabs 9 feet high. The upper portion is of wrought stones.

burial-places are usually from 12 to 20 feet in height and are crowned with a form of hat (see page 628).

"AHU," BURIAL-PLACE OF PREHISTORIC EASTER ISLANDERS

In Easter Island the problem of the disposal of the dead is supposed to have been solved by neither earth burial nor cremation, but by means of the omnipresent stones, which were built up to make a last resting-place for the departed. The burial-places are known as "ahu." They number in all some 260 and are principally found near the coast, but some 30 exist inland, suggesting that their erection on the seaboard was a matter of convenience, not of principle.

With the exception of the great eastern and western headlands, where they are scarce, it is probably safe to say that in riding round the island it is impossible to go anywhere for more than a few hundred yards without coming across one of these abodes of the dead.

They cluster most thickly in the little coves and on their inclosing promontories, which were the principal centers of population. Some are two or three hundred yards away from the edge of the cliff, others stand on the verge; in the lower land they are but little above the sea-level, while on the precipitous part of the coast the ocean breaks hundreds of feet below.

It was these burial-places, on which the images were then standing, which so strongly impressed the early voyagers and whose age and origin have remained an unsolved problem.

During the whole of our time on the island we worked on the ahu. Those which happened to lie near to either of our camps were naturally easy of access, but to reach the more distant ones, notably those on the north shore, involved a long expedition. Such a day began with, perhaps, an hour's ride; at noon there was an interval for luncheon, when, in hot weather, the neighborhood was scoured for miles to find the smallest atom of shade; and the day ended with a journey

home of not less than two hours, during which an anxious eye was kept on the sinking sun.

The burial-places are not all of one type, nor all constructed to carry statues; some also are known to have been built comparatively recently. A typical image ahu (see diagram above) is composed of a long wall running parallel with the sea, which, in a large specimen, is as much as 15 feet in height and 300 feet in length. It is buttressed on the land side with a great slope of masonry.

The wall is in three divisions. The main, or central, portion projects in the form of a terrace, on which the images stood, with their backs to the sea; it is, therefore, broad enough to carry their oval bed-plates. The latter measure up to about 10 feet in length and 8 feet or 9 feet in width and are flush with the top of the wall. On the great ahu of Tongariki there have been fifteen statues, but sometimes an ahu has carried one figure only.

FOLKLORE ACCOUNTS FOR THE FALL OF THE STATUES

The only piece of a statue which still remains on its bed-plate is the fragment at Tongariki. In the best-preserved specimens the figures lie on their faces like rows of huge nine-pins. Some are intact, but many are broken, the cleavage having generally occurred when the falling image has come in contact with the containing wall at the lower level.

No one now living remembers a statue standing on an ahu, and legend, though not of a very impressive character, has already arisen to account for the fall of some of them. An old man arrived, it is said, in the neighborhood of Tongariki, and as he was unable to speak, he made known by means of signs that he wished for chicken heads to eat; these were not forthcoming. He slept, however, in one of the houses there, and during the night his hosts were aroused by a great noise, which he said was due to his feet tapping against the stone foundations of the house. In the morning it was found that the statues on the great ahu had all fallen—the revenge of the old man.

Such lore is, however, confused with more tangible statements to the effect that the figures were overthrown in tribal warfare by means of ropes, or by the displacement of the small stones underneath the bed-plates, thus causing them to fall forward. Some students still hold to the theory that the images were overthrown by an earthquake.

The conclusion, however, that the images owe their fall to deliberate vandalism during internecine warfare seems to be confirmed by comparatively recent tradition concerning the destruction of the image which stood alone on Ahu Paro on the north coast. This was the tallest known to have been erected on a terrace, being 32 feet in height, and the events which resulted in its destruction are supposed to have occurred just before living memory, and, like most stories in Easter Island, are connected with cannibalism. This is the story:

A woman of the western clans was eaten by men of the eastern. Her son managed to trap thirty of the enemy in a cave and consumed them in revenge, and during the ensuing struggle this image was thrown down.

The oldest man living when we were on the island said that he was an infant at the time; and another, a few years younger, stated that his father, as a boy, helped his grandfather in the fight.

While, therefore, the date of the erection of the earliest image ahu is lost in the mists of antiquity, nor are we yet in a position to say when the building stopped, we can give approximately the time of the overthrow of the images. We know, from accounts of early voyagers, that the statues, or the greater number of them, were still in place in the eighteenth century; by the middle of the nineteenth century not one was standing.

Strange as it may appear, it is by no means easy to obtain a complete view of a statue on the island. Most of the images which were formerly on the ahu lie on their faces, many are broken, and detail has largely been destroyed by weather.

STATUES QUARRIED FROM VOLCANIC CONE

Happily, we are not dependent for our knowledge of the images on such information as we can gather from the ruins on the ahu, but are able to trace them to their origin, though even here excavation is necessary to see the entire figure.

Rano Raraku is a volcanic cone con-

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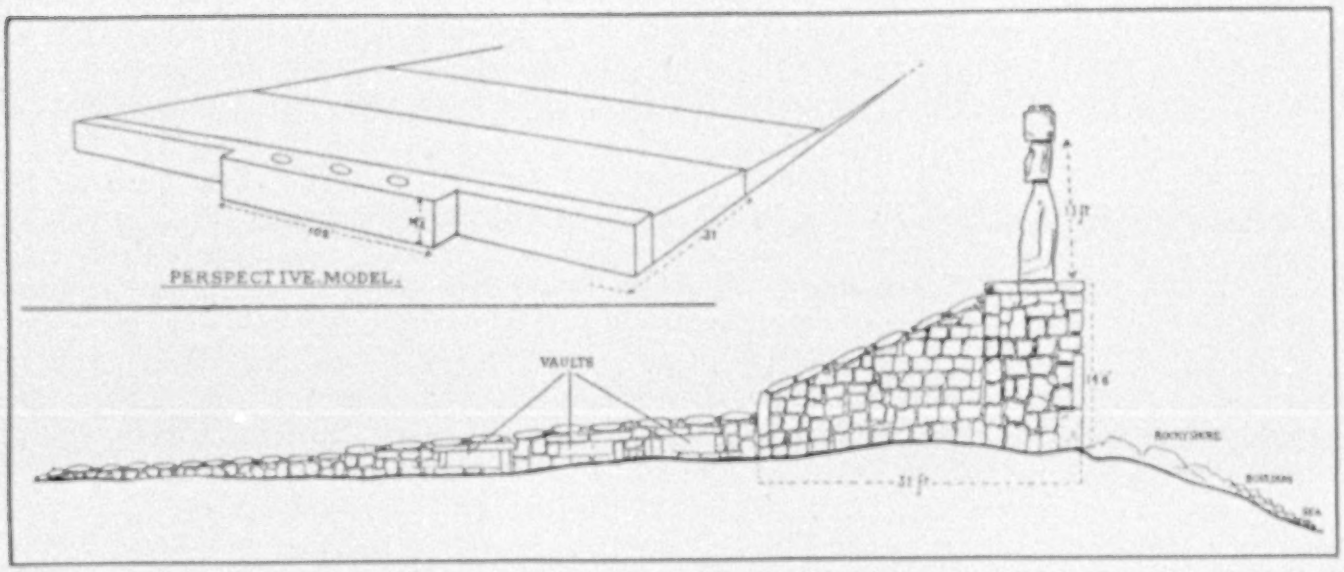

DIAGRAM OF AN IMAGE AHU: EASTER ISLAND

A long wall more than 14 feet high and 300 feet long runs parallel to the sea. It is buttressed on the land side by a great slope of masonry, beneath the surface of which are vault spaces. The ahu is in three divisions: on the central and loftiest portion stood the images with their backs to the sea; the second division slopes down to the third division or retaining wall some three feet high, composed of wrought slabs of great size and peculiar shape (see illustration on page 636).

taining a crater lake. The mountain is composed of compressed volcanic ash, which has been found in certain places to be particularly suitable for quarrying; it has been worked on the southern exterior slope and also inside the crater, both on the south and southeastern sides.

With perhaps a dozen exceptions, all the images on the island have been made from this compressed ash, and they have been dragged from this cone up hill and down dale, to adorn the terraces round the coast-line of the island. Even the images on the ahu, which have fallen into the sea on the further extremity of the western volcano, are said to have been of the same stone.

Let us in imagination scramble up the grassy side of Rano Raraku, a steep climb of some one or two hundred feet, to where the rock has been hewn away into a series of chambers and ledges.

Here images lie by the score, in all stages of evolution, just as they were left when, for some unknown reason, the workmen laid down their tools for the last time and the busy scene was still. Here, as elsewhere, the wonder of the place can only be appreciated as the eye becomes trained to see. In the majority of cases the statues still form part of the rock, and are frequently covered with lichen or are overgrown with grass and ferns.

A conspicuous image first strikes the beholder; then, as he gazes, he finds with surprise that the walls on either hand are themselves wrought into figures, and that, resting in a niche above him, is another giant; he looks down and realizes with a start that his foot is resting on a mighty face.

CRUDE TOOLS USED BY THE IMAGE-MAKERS

The tools were found with which the work had been done. One type of implement can be seen lying about in great abundance. They are of the same material as the lapilli in the statues and have been made by flaking.

Some specimens are pointed at both ends; others have one end more or less rounded. It is unlikely that they were hafted, and they were probably held in the hand when in use. They were apparently discarded as soon as the point became damaged.

There is another tool much more carefully made — an adze blade, with the lower end beveled off to form the cutting edge. These are rarely found, the probability being that they were too precious to leave at the works, but were taken home by the workmen.

The whole process of quarrying an image was not necessarily very lengthy; the calculation of the number of men who could work at the stone at the same time

A GIANT IMAGE ON ITS BACK

and the amount each could accomplish gave the rather surprising result that a statue might be roughed out within the space of 15 days.

The most notable part of the work was the skill which kept the figure so perfect in design and balance that it was subsequently able to maintain its equilibrium in a standing position: to this it is difficult to pay too high a tribute.

How shall we account for the vast number of images to be found in the quarry? A certain number had, no doubt, been abandoned prior to the general cessation of the work; in some cases a flaw has been found in the rock, and it is evident that the original plan had to be given up, although part of the stone was sometimes used either for a smaller image or for one cut at a different angle.

In other instances the sculptors were unlucky enough to come across, at important points, one or more of the hard nodules with which their tools could not deal, and as the work could not go down to posterity with a large wart on its nose or excrescense on its chin, it had to be stopped.

But when all these instances have been subtracted, the amount of figures remaining in the quarry is still startlingly large when compared with the number which have been taken out of it, and must have necessitated, if they were all in hand at once, a number of workers out of all proportion to any population which the island ever, in all likelihood, maintained.

The theory naturally suggests itself that some of the images were merely rock-carvings and were not intended to be removed. It is one which needs to be adopted with caution, for more than once, where every appearance has pointed to its being correct, a similar neighbor has been found which was actually being removed; on the whole, however, many students agree that there can be little doubt that it is at any rate a partial solution of the problem.

Some of the images are little more than embossed carvings on the face of the rock without surrounding alley-ways. Perhaps the strongest evidence is afforded by the size of some of the statues: the largest is 66 feet in length, whereas 36 feet is the extreme found outside the quarry. Tradition, it is true, points out the ahu on the south coast as the one for which this monster was designed, but it is difficult to believe the image-makers ever intended to move such a mass.

If this theory is correct, it would be interesting to know whether the stage of carving came first, and that of removal followed, as the workmen became more expert; or whether it was the result of

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Photograph Courtesy U. S. National Museum

A WOODEN CLUB FOUND ON EASTER ISLAND: ITS HIEROGLYPHICS HAVE NEVER BEEN DECIPHERED

This specimen was collected by Paymaster W. J. Thompson, of the United States Navy, on his visit to Easter Island in 1886, and deposited in the U. S. National Museum.

decadence when labor may have become scarce. It is, of course, possible that the two methods proceeded concurrently, rock-carvings being within the means of those who could not procure the labor necessary to move the statue.

LEGEND EXPLAINS WHY IMAGE-MAKING CEASED ON EASTER ISLAND

Legendary lore throws no light on the reasons which led to the desertion of this labyrinth of work, but a story has been invented which entirely satisfies the native mind and is repeated on every occasion. It runs as follows:

There was a certain old woman who lived at the southern corner of the mountain and occupied the position of cook to the image-makers. She was the most important person of the establishment, and moved the images by supernatural power (*mana*), ordering them about at her will. One day, when she was away, the workers obtained a fine lobster, which had been caught on the west coast. They ate it, leaving none for her. Unfortunately, they forgot to conceal the remains, and when the cook returned and found how she had been treated, she arose in her wrath, told all the images to fall down, and thus brought the work to a standstill.

While the scene on Raraku always awakens a certain sense of awe, it is particularly inspiring at sunset, when, as the light fades, the images gradually become outlined as stupendous black figures against the gorgeous coloring of the west.

The most striking sight witnessed on the island was a fire on the hillside. In order to see our work more clearly, we set alight the long, dry grass, always a virtuous act on Easter Island, that the live stock may have the benefit of the fresh shoots. In a moment the whole landscape was ablaze. The mountain, wreathed in masses of driving smoke, grew to portentous size. In the quarries, below the whirl of flame, the great statues stood out calmly, with quiet smiles, like stoical souls in Hades.

OUR MAP OF THE PACIFIC

WE ARE sure the readers of THE GEOGRAPHIC will welcome with special favor the beautiful and timely map showing the "Sovereignty and Mandate Boundary Lines of the Islands of the Pacific," which is issued as a supplement to this number of the Magazine.

This is the fourth of an invaluable series of maps which have been compiled by the National Geographic Society and issued as supplements to its Magazine during 1921, a Map of New Europe having been issued in February, a New Map of Asia in May, and a New Map of South America in October.*

All of these maps have been printed in colors, on a generous scale, and represent the highest achievements in the art of cartography, the cost of compiling, engraving, and printing approximating $150,000.00.

During 1922 The Society will continue its map program, issuing a New Map of the Countries of the Caribbean in February, to be followed by new maps of Africa and of the World later in the year.

CHANGES OF SOVEREIGNTY IN THE PACIFIC

The ownership of the islands of the Pacific affords one of the most striking examples known to history of the erratic course of sovereignty.

Anxious to achieve some spectacular discovery in order to appease his sovereign, Ferdinand of Spain, whose displeasure he had incurred, Vasco Nuñez de Balboa, reckless adventurer and courageous governor of the Spanish colony of Darien, learned from his Indian friends of a vast sea lying to the west. He crossed the Isthmus of Panama and on September 25, 1513, was the first European to behold the ocean to which he gave the name, Great South Sea.

It was Magellan, the Portuguese, who in 1520 first gave the sea the name "Pacific" (El Mar Pacifico), after sailing for many weeks over its calm waters from the Straits of Magellan to one of the Tuamotu group.

*Additional copies of any of these four maps may be obtained from the headquarters of the National Geographic Society in Washington. Cloth edition, $1.50; paper, $1.00 each.

With these claims to discovery and early navigation, Spain and Portugal were for many years the only rivals in the Pacific. Today Spain owns not a single palm tree nor coral rock in the great ocean, and Portugal's interests are confined solely to the eastern portion of the island of Timor, in the Malay Archipelago.

YAP ALONE A SUBJECT OF CONTROVERSY

About few of the thousands of coral and volcanic islands is there any controversy as to ownership, and of these the status of Yap alone is occasioning diplomatic discussion, due mainly to its importance as a cable station.

In the wide expanse of ocean south of the Hawaiian Islands are several isolated "specks" which are claimed both by the United States and Great Britain. Washington (or New York) and Christmas Islands were occupied by American guano companies about the middle of the last century, but were subsequently deserted; and, while the United States has never formally renounced claim to them, their guano deposits are being worked now by British companies, and the islands themselves are included in official British publications as units of the "Gilbert and Ellice Islands Colony." The proclamation annexing Christmas Island to this colony was issued as recently as November, 1919.

In like manner, the international status of Howland and Baker is in question. Palmyra is claimed both by the United States and Great Britain, but here it is the United States which has the "eleven points in the law"—possession. It was included in the Hawaiian Archipelago, and its one and a half square miles of coral rock, inhabited by three people, is now under active American administration.

OTHER ISLANDS MAY REMAIN TO BE DISCOVERED

In the vast Pacific are scattered thousands of islands, ranging from the world's smallest continent (Australia) and second largest island (New Guinea) to the tiniest solitary pinnacle of coral rock and tip of volcanic peak.

Some of its smaller islands are believed to be as yet undiscovered, especially in regions far removed from the lanes of

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Drawn by A. H. Bumstead

A MAP OF ONE OF NATURE'S MOST MARVELOUS CREATIONS

A cluster of volcanic and coral islands encircled by a protective reef of coral, 140 miles in circumference, which has been raised by myriads of minute and tender animals. Truk, Ruk, and Hogolu are the names given to this collective unit of the Caroline group (see text, page 626, and pictures, pages 601-607). Yap is a similar but smaller cluster (see page 617).

commerce, while in the coral lagoons, such as Truk, the islands within atolls multiply the number beyond all computation (see map above).

So wide are the seas and so small some of the islets that there is considerable doubt as to the existence of certain ones which have been reported but which have not been visited in many years. Among these is Walker, its apocryphal existence being indicated on the chart with an interrogation point following the name.

An effort has been made to assist the user of the map by including the native name, italicized and in parentheses, following the official name. The question of nomenclature, however, is an extremely confusing one, as indicated in Mr. Wood's article (see page 626).

In the preparation of its Map of the Islands of the Pacific, the National Geographic Society is indebted for valuable data and for constructive criticism to the Graphic Section of the Military Intelligence Division, War Department; to the Hydrographic Office, Navy Department, and to officials of the Far Eastern Division of the State Department.

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SHANTUNG PROVINCE
HONAN PROV.
KIANGSU PROV.
ANHWEI PROV.
HUPEH PROV.
CHEKIANG PROV.
FUKIEN PROV.
C H I N A
Shanghai
Chusan Archipelago
Foochow
Amoy
Swatow
Hongkong
Pratas
CHOSEN Korea
Quelpart
Tsushima
Oki Is.
HONSHU
SHIKOKU
KIUSHU
JAPAN
Tokyo
Yokohama
Kanawa
Mikura
Hachijo
Aogo
Bayonnaise
Smith
Ponafidin
Lot's Wife
Goto Is.
Tanega Shima
Yaku
Suwase
Aku
Muro
Yoko
Amami
Kikaiga Shima
Tokuno Shima
Okino Erabu
Yoron
Yebeya
OKINAWA
RYU KYU (LU CHU OR LOO CHOO) ISLANDS
Ishigaki
Iriomote
Miyako
SAKISHIMA IS.
Raca
Parry Group
Peel
OGASAWARA IS. Bonin
Baily Is.
Coffin Is.
VOLCANO IS. Kazan
S. Alessandro
Sulphur
S. Agostino
Tropic of Cancer
TAIWAN FORMOSA
Samasana
Botel Tobago
Langdale
MAGELHAES ARCHIPELAGO
Euphrosyne
Parece Vela
Pajaros
Urracas
Assumption
Agrigan
Pagan
Alamagan
Guguan
Zealandia Bank
Anatahan
Sarigan
Medinilla
Beatrice
Saipan
Tinian
Aguijan
Rota
GUAM
Galvez Bank
Santa Rosa Reef
MARIANAS OR LADRONES
Batan Is.
Balintang
Babuyan
Camiguin
LUZON
Manila
Manila Bay
Polillo
MINDORO
Catanduanes
PHILIPPINE ISLANDS
UNITED STATES
SAMAR
PANAY
Leyte
NEGROS
Dinagat
Bohol
SULU SEA
MINDANAO
Basilan
SULU ARCHIPELAGO
Jolo
Cape San Agustin
Palmas
Karkaralong Is.
Talauer Is.
CELEBES SEA
Sangi Is.
M I C R O
Uluthi or Mackenzie Is.
Feys
Yap
Ngoli
Kajangle
Baobeltaob
Korror
Peliu
PALAO OR PELEW IS.
Sorol
Faraulep
Ifalik
Woleo
Eurupig
Grimes
W. Fallo
Pikelot
Olol Is.
Enderby
Pulusuk
Helene Shoal
C A R O L I N E
Sonsorol
Pulo Anna
Pulo Mariere
Lord North
Helen Reef
Saxegaard
St. David Is.
M
E
Equator
Cape Kandi
Mayo
Tifore
Gulf of Tomini
Morotai
HALMAHERA
Asia Is.
Ayu Is.
Waigeoe
Misori Is.
Cape Spencer
Cape D'Urville
Yapen
CELEBES
Peling Is.
Taliaboe
Mangoli
Obi Major
Misole
Soela Is.
MOLUCCA SEA
BOERO
CERAM
Banda Is.
Adi
Kei Is.
Aroe Is.
Wawoni
Buton
Salayer
Tiger Is.
Flores Sea
B A N D A S E A
Turtle Is.
Wetta
Roma
Moa
Timor Laut
Frederick Henry
A R A F U R A S E A
FLORES
SANDALWOOD
TIMOR
Troubadour
Savu
Rotti
Dana
N E W G U I N E A
Commerson Is.
Anchorite Is.
Hermit Is.
ADMIRALTY IS.
L'Echiquier Is.
D'Urville
Schouten
Portland
BISMARCK ARCHIPELAGO
Dampier
Long
Gulf of Papua
Torres Strait
Cape York
Melville
Bathurst
Goulburn Is.
Wessel
Cape Arnhem
Palmerston
Cartier
Raine
GULF OF
Groote Eylandt
Cape Melville
Osprey Reef

150 160 170 180

Melish Bank

Ganges

Morell

Patrocinio

Ocean (Curc) Midway

Pearl & Hermes

Marcus

Los Jardines

Wake

N O R T H P A

Schetman Reef

Taongi (Gaspar Rico)

J A P A N E S E

Bikar (Dawson)

Rongerik

Rongelap

Bikini Is

Enewetak (Brown)

Utirik

Atlinghoe

Taka

Likieb Is

Ailuk

Wotho (Schanz)

Miadi (New Year)

Dunkin Reef

Ujelang (Providence)

Kwadjalin Is

Erikub

Maloelab

RATAK CHAIN

Ujae

Lae

Lib

Aurh

Nemu

Majuro

Jabwot

Ailinglap

Ahrno Atoll

Mille Is

Jaluit

Keats Bank

Namorik

Lukunor

Kili

Kusaie (Ualan)

Ebon Is

Indiana Reef

Makin

Taritari

Apaiang (Charlotte)

Maraki (Matthew)

Tarawa (Cook)

GILBERT ISLANDS

Malana (Hall)

Apamama (Hopper)

Kuria (Wood)

Aranuka (Henderville)

Nauru (Pleasant)

Howland (U.S.)

Baker (U.S.)

Nonuti (Sydenham)

Banaba (Ocean)

Francis

Nukunau (Byron)

Taputeuea (Drummond)

Onotoa (Clerk)

Winslow Reef

Tamana (Roche)

Arorai (Hurd)

Mc Keans

Gardner

Nanouki (Sir Andrew)

Nikitao (Speedwell)

Nanumaga (Hudson)

Niutao (Netherland)

Vaitupu (Treby)

Nukufetau (De Peyster)

Funafuti (Ellice)

Nukulaelae (Mitchell)

ELLICE ISLANDS

Nanumea (Sophia)

Rebbie Bank

Rose

Tuscarora Bank

Bayonnaise Bank

Lalla Rookh

Horne Is

Futuna (Hoorn)

Alofi

Wallis

Rotuma

Eagleston Reef

Tucopia

Anuda (Cherry)

Fatuka

Vanikoro

Santa Cruz

Tasman

Ongtong Java (Lord Howe)

Roncador Reef

Choiseul

Isabel

Sikaiana (Stewart)

Malaita

SANTA CRUZ ISLANDS

Duff or Wilson Group

Guadalcanar

Makira Group

Anogogo

Bauro

S. Cristobal

Nitendi (Santa Cruz)

Rennell

Bellona

Indispensable Reefs

Tagula

Rossel Archipelago

Pocklington Reef

Laughlan Is

D'Entrecasteaux Is

Woodlark

Trobriand Is (Kouvenev)

Tauu Is

Nissan (Green)

St. John

Sable

Abgarris (Ford)

Hanover

Gardner

Vitu (Matthias)

NEW IRELAND (New Mecklenburg)

NEW BRITAIN (NEU POMMERN)

BOUGAINVILLE

SOLOMON ISLANDS

CORAL SEA

MARSHALL ISLANDS

RALIK CHAIN

SENAVINA IS

Mokil (Duperrey)

Pingelap (Macaskill)

Ponape

Namoluk

Etal

Lukunoch

Ngatik (Raven)

Mortlock Is (Namoi)

Satawan

Nukuor (Montreverde)

Matador

Greenwich (Constantin)

Los Matrices

Pis

Irruk (Hogolu)

Nama (D'Urville)

Losap

Pakin

Ant

Royalist Is

Tamatam

Oraluk

Anaccita

Morilau

Mindo Reef

Faii Hall Is

Dublon (Duke of York)

Truk

Moen (Hogolu)

Tol

Uman

Ulul

Fefan

Ruk

Namonuito

Pulusuk

Pulap

Losap

Nama

Pakin

Ant

Ponape

Mokil

Pingelap

Jaluit

Namorik

Kili

Ebon

Kusaie

Ualan

Nukuoro

Kapingamarangi

Monteverde

Indiana

Matador

Greenwich

Constantin

Nauru

Pleasant

Ocean

Banaba

Makin

Tarawa

Apaiang

Maraki

Matthew

Cherlotte

Cook

Malana

Hall

Apamama

Hopper

Kuria

Wood

Aranuka

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Ellice

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Mitchell

Nanumea

Sophia

Rebbie Bank

Rose

Tuscarora Bank

Bayonnaise Bank

Lalla Rookh

Horne Is

Futuna

Hoorn

Alofi

Wallis

Rotuma

Eagleston Reef

Tucopia

Anuda

Cherry

Fatuka

Vanikoro

Santa Cruz

Tasman

Ongtong Java

Lord Howe

Roncador Reef

Choiseul

Isabel

Sikaiana

Stewart

Malaita

SANTA CRUZ ISLANDS

Duff or Wilson Group

Guadalcanar

Makira Group

Anogogo

Bauro

S. Cristobal

Nitendi

Santa Cruz

Rennell

Bellona

Indispensable Reefs

Tagula

Rossel Archipelago

Pocklington Reef

Laughlan Is

D'Entrecasteaux Is

Woodlark

Trobriand Is

Kouvenev

Tauu Is

Nissan

Green

St. John

Sable

Abgarris

Ford

Hanover

Gardner

Vitu

Matthias

NEW IRELAND

New Mecklenburg

NEW BRITAIN

NEU POMMERN

BOUGAINVILLE

SOLOMON ISLANDS

CORAL SEA

MARSHALL ISLANDS

RALIK CHAIN

SENAVINA IS

Mokil

Duperrey

Pingelap

Macaskill

Ponape

Namoluk

Etal

Lukunoch

Ngatik

Raven

Mortlock Is

Namoi

Satawan

Nukuor

Monteverde

Matador

Greenwich

Constantin

Nauru

Pleasant

Ocean

Banaba

Makin

Tarawa

Apaiang

Maraki

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Isabel

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Guadalcanar

Makira Group

Anogogo

Bauro

S. Cristobal

Nitendi

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Kouvenev

Tauu Is

Nissan

Green

St. John

Sable

Abgarris

Ford

Hanover

Gardner

Vitu

Matthias

NEW IRELAND

New Mecklenburg

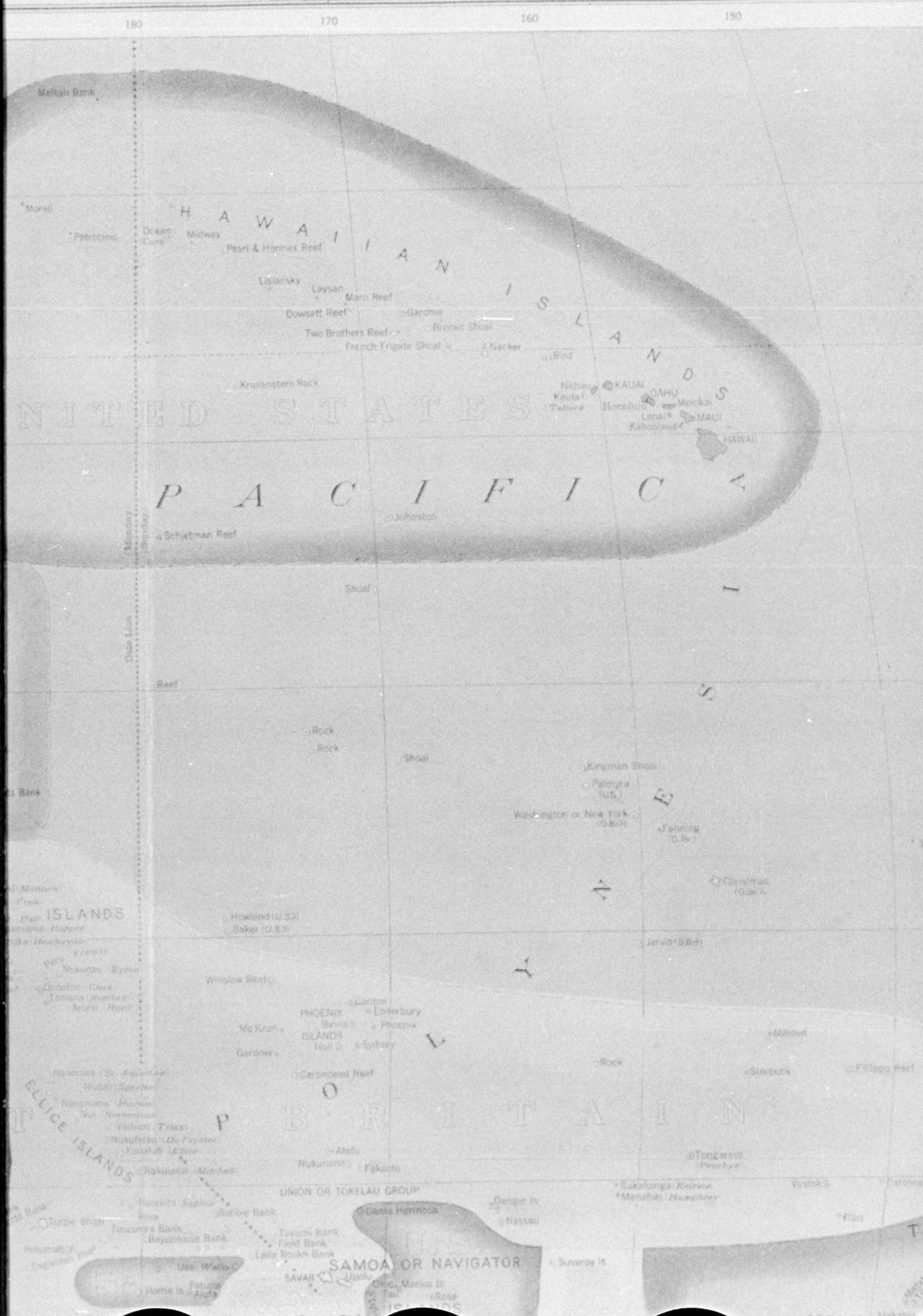
NEW BRITAIN

NEU POMMERN

BOUGAINVILLE

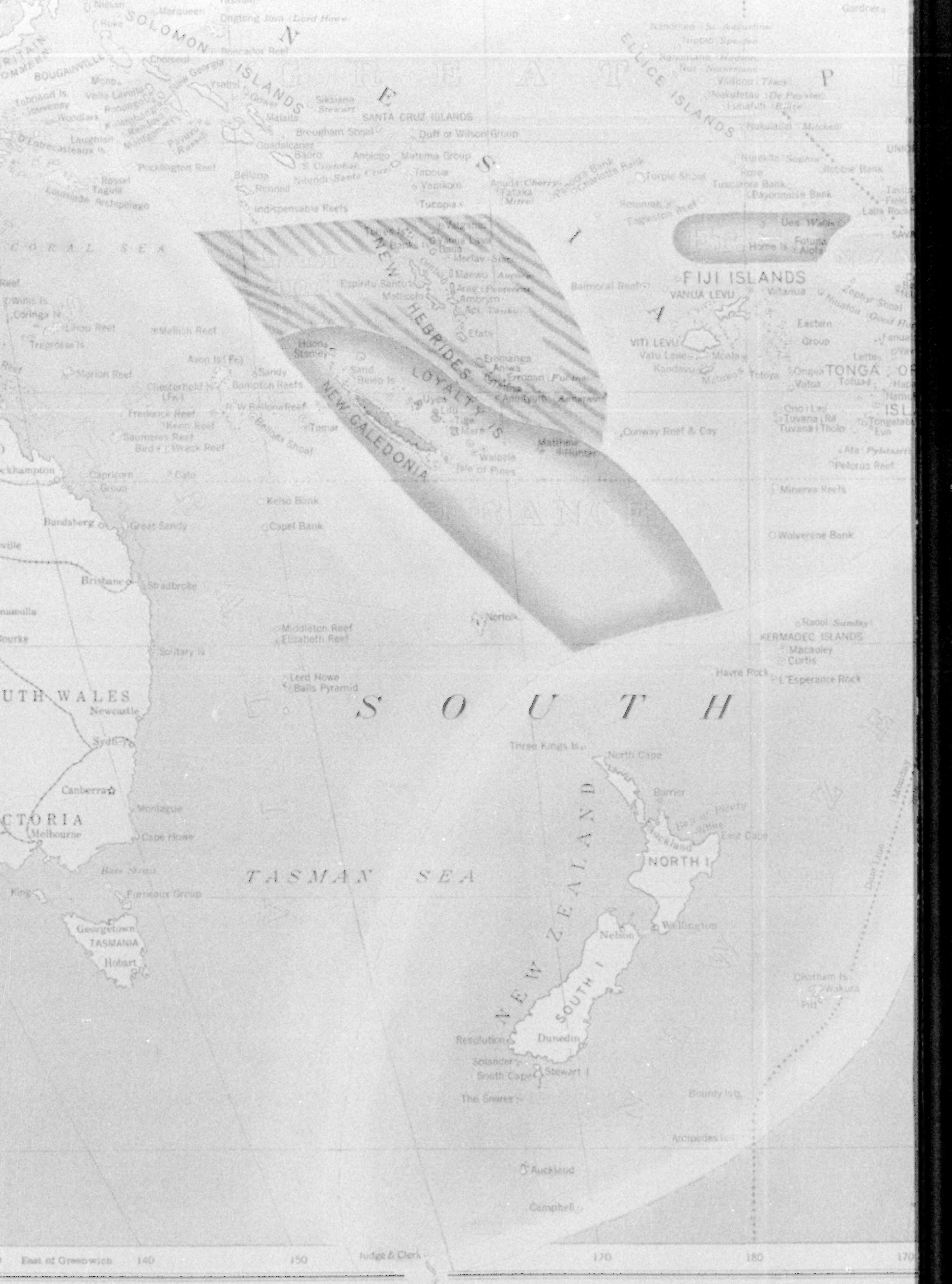
SOLOMON ISLANDS

CORAL SEA


180
170
160
150
Mellish Bank
Morell
Patrocinio
Ocean Cure
Midway
Pearl & Hermes Reef
HAWAIIAN ISLANDS
Lisiansky
Laysan
Maro Reef
Dowsett Reef
Gardner
Brooks Shoal
Two Brothers Reef
French Frigate Shoal
Necker
Bird
Krusenstern Rock
Nihau
KAUAI
Kaula
Tahura
OAHU
Honolulu
Molokai
Lanai
MAUI
Kahoolawe
HAWAII
NITED STATES
PACIFIC
Johnston
Schjetman Reef
Monday
Sunday
Shoal
Date Line
Reef
Rock
Rock
Shoal
Kingman Shoal
Palmyra (U.S.)
Washington or New York (G.Br.)
Fanning (G.Br.)
Christmas (G.Br.)
ISLANDS
Howland (U.S.)
Baker (U.S.)
Jarvis (G.Br.)
Winslow Reef
Canton
PHOENIX ISLANDS
Enderbury
Phoenix
Birnie
Hull
Sydney
McKean
Gardner
Carondelet Reef
Rock
Malden
Starbuck
Fitilopo Reef
ELLICE ISLANDS
Nanomea (St. Augustine)
Niutao (Speiden)
Nanumana (Hudson)
Nui (Netherlands)
Vaitupu (Tracy)
Nukufetau (De Peyster)
Funafuti (Ellice)
Nukulailai (Mitchell)
Atafu
Nukunono
Fakaofu
Tongareva (Penrhyn)
UNION OR TOKELAU GROUP
Rakahanga (Reirson)
Manahiki (Humphrey)
Vostok
Nuiakita (Sophia)
Rose
Robbie Bank
Genta Hermosa
Danger Is
Nassau
Turpie Shoal
Tuscarora Bank
Bayonnaise Bank
Taviuni Bank
Field Bank
Lalla Rookh Bank
Flint
Rotuman Is
Eagleston Reef
Uea (Wallis)
SAMOA OR NAVIGATOR
Suvarov Is
SAVAII
Upolu
Manua Is
Tau
Rose
Horne Is
Fotuna
Alofa
ISLANDS

140
130
San Francisco
120
110
UNITED STATES
San Miguel
Santa Rosa
San Nicolas
San Clemente
Los Angeles
San Diego
Rock
MEXICO
30
Guadalupe
Tropic of Cancer
20
O C E A N
Island
10
Walker
Equator
0
Reef
MARQUESAS ISLANDS
Hatutu
Eiao
Motuiti
Nukuhiva
Uapu
Clark Bank
Uahuka
Fatuhuku
Hivaoa
Tauata
Motane
Fatuhiva
Caroline Atoll
10
T U A M O T U
(PAUMOTU OR LOW)
A R
Tetopoto
Disappointment Is
Pukapuka
King George Is

NEW GUINEA
BANDA SEA
ARAFURA SEA
FLORES
TIMOR
SANDALWOOD
Buton
Banda Is.
Turtle Is.
Kei Is.
Aroe Is.
Salayer
Tiger Is.
Flores Sea
Lombien
Ombai
Wetta
Roma
Moa
Troubadour
Savu
Dana
Rotti
Frederick Henry
Gulf of Papua
Torres Strait
Cape York
Raine
Melville
Bathurst
Goulbourn Is.
Wessel
Cape Arnhem
Palmerston
Peron
Carter
Cape Bougainville
Buccaneer Archipelago
GULF OF CARPENTARIA
Groote Eylandt
Sir E. Pellew Is.
Wellesley Is.
Cape Melville
Osprey Reef
Bougainville Reef
Holmes Reef
Willis Is.
Coringa
Great Barrier Reef
Townsville
NORTHERN TERRITORY
WESTERN AUSTRALIA
QUEENSLAND
Tropic of Capricorn
Longreach
Rockhampton
Charleville
Cunnamulla
Bourke
Oodnadatta
SOUTH AUSTRALIA
NEW SOUTH
Geraldton
Coolgardie
Perth
Eucla
GREAT AUSTRALIAN BIGHT
Albany
Recherche Archipelago
Greenly Rocky
Port Augusta
Adelaide
Kangaroo
Kingston
Portland
King
10
30
40
50
80
90
100
110
120
Longitude
130



SOLOMON ISLANDS
ELLICE ISLANDS
SANTA CRUZ ISLANDS
Duff or Wilson Group
Matema Group
Tucopia
Indispensable Reefs
Pocklington Reef
Rennell
Bellona
Guadalcanar
Malaita
Ysabel
Choiseul
Rossel
Tagula
Louisiade Archipelago
Rotumah
Turpie Shoal
Tuscarora Bank
Bayonnaise Bank
Rose
Robbie Bank
Ues Wallis
Home Is
Futuna
Alofa
FIJI ISLANDS
VANUA LEVU
VITI LEVU
Vatu Leile
Kandavu
Moala
Totoya
Ongea
Vatoa
Eastern Group
Zephyr Shoal
Balmoral Reef
Conway Reef & Cay
Matthew
Hunter
Walpole
Isle of Pines
NEW HEBRIDES
LOYALTY IS
NEW CALEDONIA
Efate
Erromanga
Aniwa
Erronan
Futuna
Anatyum
Aneiteum
Uyea
Lifu
Tiga
Mare
Espiritu Santo
Mallicolo
Ambrym
Maewo
Aurora
Banks Is
Vanua Lava
Merlav
Ombau
Huon
Stanley
Sand
Beleo Is
Avon Is (Fr.)
Sandy
Bampton Reefs
Chesterfield Is (Fr.)
Marion Reef
Mellish Reef
Lihou Reef
Tregrosse Is
Coringa Is
Willis Is
Frederick Reef
Kenn Reef
Saumares Reef
Bird & Wreck Reef
Bellona Shoal
Tamar
Capricorn Group
Cato
Kelso Bank
Capel Bank
Bundaberg
Great Sandy
Brisbane
Stradbroke
Solitary Is
Middleton Reef
Elizabeth Reef
Lord Howe
Balls Pyramid
Norfolk
Minerva Reefs
Wolverene Bank
Pelorus Reef
Tongatabu
Eva
Tuvana Ra
Tuvana Tholo
Ono Lau
Tongatabu
Raoul Sunday
KERMADEC ISLANDS
Macauley
Curtis
Havre Rock
L'Esperance Rock
Gardner
Nanomea
Niptao
Nukufetau
Funafuti
Nukulailai
Nurakita
Sophia
Rotumah
Tagleston Reef
Turpie Shoal
Rose
Tuscarora Bank
Bayonnaise Bank
Robbie Bank
Lalla Rook
Tasman Sea
Three Kings Is
North Cape
Barrier
Bay of Plenty
White
Auckland
East Cape
NORTH I
Wellington
Nelson
SOUTH I
Dunedin
Resolution
Solander
South Cape
Stewart I
The Snares
Bounty Is
Antipodes Is
Auckland
Campbell
Chatham Is
Wakura
Pitt
Monday
Date Line
NEW ZEALAND
TASMAN SEA
SOUTH WALES
Newcastle
Sydney
Canberra
Montague
Cape Howe
Melbourne
Bass Strait
King
Furneaux Group
Georgetown
TASMANIA
Hobart
East of Greenwich
140
150
170
180
170

ELLICE ISLANDS

UNION OR TOKELAU GROUP

SAMOA OR NAVIGATOR ISLANDS

FIJI ISLANDS

VANUA LEVU

VITI LEVU

Eastern Group

TONGA OR FRIENDLY ISLANDS

HERVEY OR COOK ISLANDS

SOCIETY ISLANDS

TUBUAI OR AUSTRAL ISLANDS

KERMADEC ISLANDS

NORTH I

T H P A C I F I C

Longitude West of Greenwich

180 170 160 150 140 130

MARQUESAS ISLANDS

TUAMOTU ARCHIPELAGO
(PAUMOTU OR LOW)

OCEAN

SOVEREIGNTY AND MANDATE BOUNDARY LINES IN 1921 OF THE ISLANDS OF THE PACIFIC

PREPARED IN THE MAP DEPARTMENT OF THE
NATIONAL GEOGRAPHIC SOCIETY
FOR
THE NATIONAL GEOGRAPHIC MAGAZINE
GILBERT GROSVENOR, EDITOR

Scale 1: 22,375,000

0 500 1000 1500

STATUTE MILES

SANSON-FLAMSTEED EQUAL AREA PROJECTION

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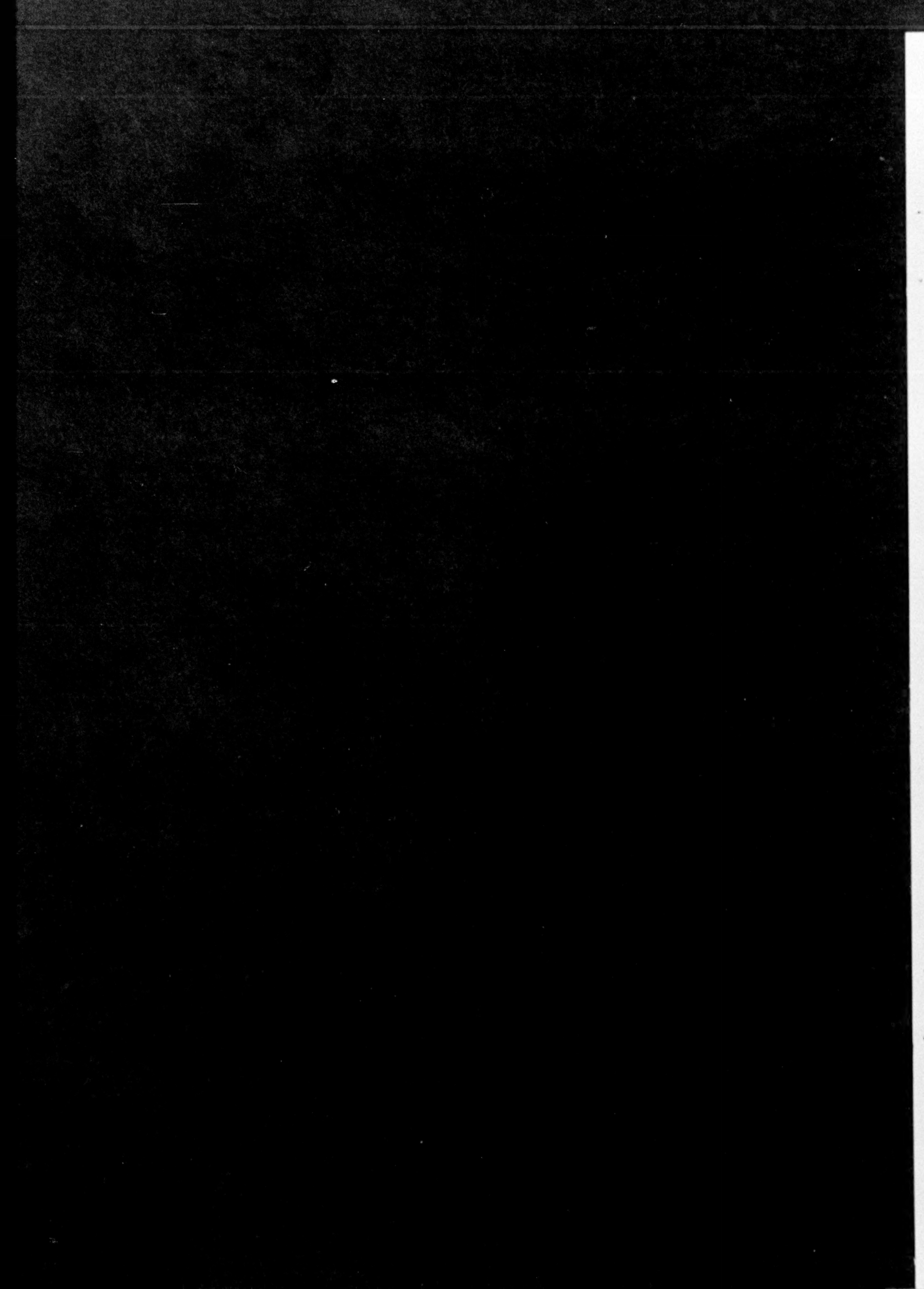
Drawn by Albert H. Bumstead and James M. Darley



My little belle, you rightly spell
The happiness you wish us—
The truest word we've ever heard
For soup that's just delicious!

A masterpiece!

That is what you will pronounce Campbell's Vegetable Soup at the first delicious spoonful. The Campbell's zeal for Quality, the Campbell's nicety in preparation and blending, through more than half a century, tell in the delightful savor and invigorating richness of this famous soup.

Campbell's Vegetable Soup

offers all the varied flavors and well-balanced food values of luscious red-ripe tomatoes, succulent Dutch cabbage, Chantenay carrots, choicest white and sweet potatoes, golden turnips, Country Gentleman corn, baby limas and dainty peas. Selected cereals, rich beef stock, herbs and spices —thirty-two distinct ingredients—complete this tempting soup.

21 kinds **12c a can**

Campbells' Soups

LOOK FOR THE RED AND WHITE LABEL

Democracy

"—of the people, by the people, for the people"

People of every walk of life, in every state in the Union, are represented in the ownership of the Bell Telephone System. People from every class of telephone users, members of every trade, profession and business, as well as thousands of trust funds, are partners in this greatest investment democracy which is made up of the more than 175,000 stockholders of the American Telephone and Telegraph Company.

If this great body of people clasped hands they would form a line more than 150 miles long. Marching by your door, it would take more than 48 hours of ceaseless tramping for the line to pass.

This democracy of Bell telephone owners is greater in number than the entire population of one of our states; and more than half of its owners are women.

There is one Bell telephone shareholder for every 34 telephone subscribers. No other great industry has so democratic a distribution of its shares; no other industry is so completely owned by the people it serves. In the truest sense, the Bell System is an organization "of the people, by the people, for the people."

It is, therefore, not surprising that the Bell System gives the best and cheapest telephone service to be found anywhere in the world.

"BELL SYSTEM"

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

AND ASSOCIATED COMPANIES

One Policy, One System, Universal Service, and all directed toward Better Service

"Mention The Geographic—It identifies you"

"I have a Friend who . . . . "

WHY otherwise intelligent people will accept anonymous say-sos on investments is difficult to explain.

In considering investment purchases clear-cut information is the essential need—a need that can readily be met by any of our 50 offices.

Our information is based on a national viewpoint and years of experience.

We invite you to make yourself and your investment needs known at our nearest office.

A current list of high-grade securities mailed on request for AN-172.

BONDS
SHORT TERM NOTES
ACCEPTANCES

The National City Company

National City Bank Building, New York

Offices in more than 50 leading cities throughout the World

Books that are never finished

Bulky volumes of mathematical calculation that represent almost a decade of untiring research, cram the safe at the Kodak Lens Plant.

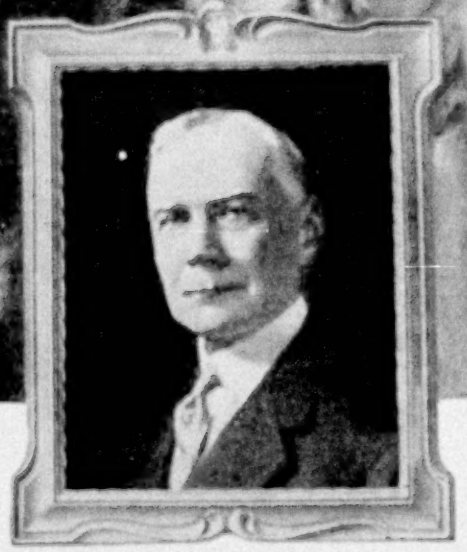
It is on these pages—a record of lens achievement—that the Kodak Anastigmat, subjected, of course, to relentless laboratory tests at each stage of its development, was born and perfected.

And still the work goes on. No book is marked "Finis" because true genius that created the Kodak Anastigmat is never satisfied.

"About Lenses" is a little booklet whose primary purpose is to give you information you ought to have in order to get better pictures. We should like to send you a copy — free.

The KODAK ANASTIGMATS
f.7.7 *f*.6.3 and *f*.4.5

Eastman Kodak Company
Rochester, N. Y.



Charles Henry Hulburd, Elgin's third President, who has headed this great organization for nearly a quarter-century

The Elgin of Today

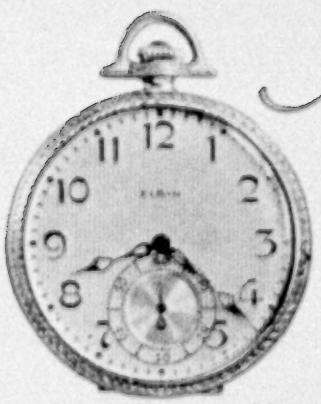
"Time goes, you say? Ah, no.
Alas, Time stays: we go!"

NEVER in the world's history has *the value of Time* been so widely recognized as today.

"A man is known by the Elgin he carries"—business and social leaders are known by the value they put on their Time. The more precious a commodity, the finer the safeguards for its measurement and control.

In the great Elgin factory of today, the original Elgin working principle is steadfastly maintained—"*all parts interchangeable.*" The standardized parts of the modern Elgin are instantly available at the repair bench of the nearest Jeweler.

Thus guesswork has been replaced by precision—the Sun Dial of ancient Babylon by those timekeeping marvels of today—

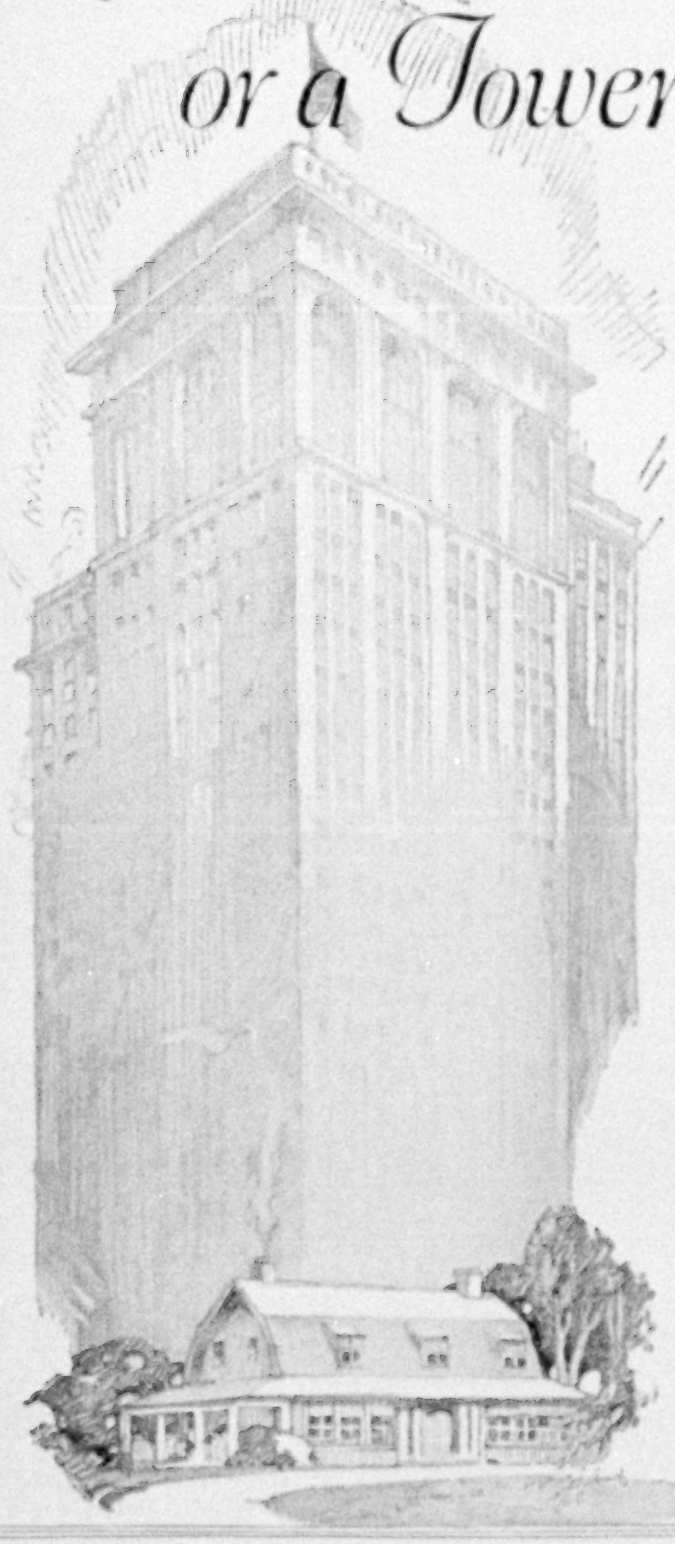


The $250 Corsican • Material, construction, adjustments and service fully covered by Elgin Guarantee •

Elgin Watches

MADE IN ELGIN, U. S. A.

In a Modest Home or a Towering Skyscraper



you can have the protection of uniform quality throughout the complete plumbing, sanitation and heating systems by utilizing Crane Service.

Crane Service brings to the equipping of the skyscraper the resources and manufacturing experience necessary to meet all requirements of such installations, however extensive or unusual. And it assures for the homebuilder in turn the completeness and reliability which safeguard the investors in a mammoth business or industrial structure.

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Plumbing, Sanitation and Heating Equipment

can be selected in all its details at any of the Crane branches, exhibit rooms or offices. It permits of filling the complete specifications for such systems through one reliable source of supply, with the aid of large assortments and the most approved designs.

Visit the nearest Crane establishment with your architect and you will find it an easy matter to make full selections.

We are manufacturers of about 20,000 articles, including valves, pipe fittings and steam specialties, made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes, for all pressures and all purposes, and are distributors through the trade of pipe, heating and plumbing materials.

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*LOWELL, MASS.
BOSTON, MASS.
*WORCESTER, MASS.
SPRINGFIELD, MASS.
*PROVIDENCE, R. I.
HARTFORD, CONN.
*NEW LONDON, CONN.
*WATERBURY, CONN.
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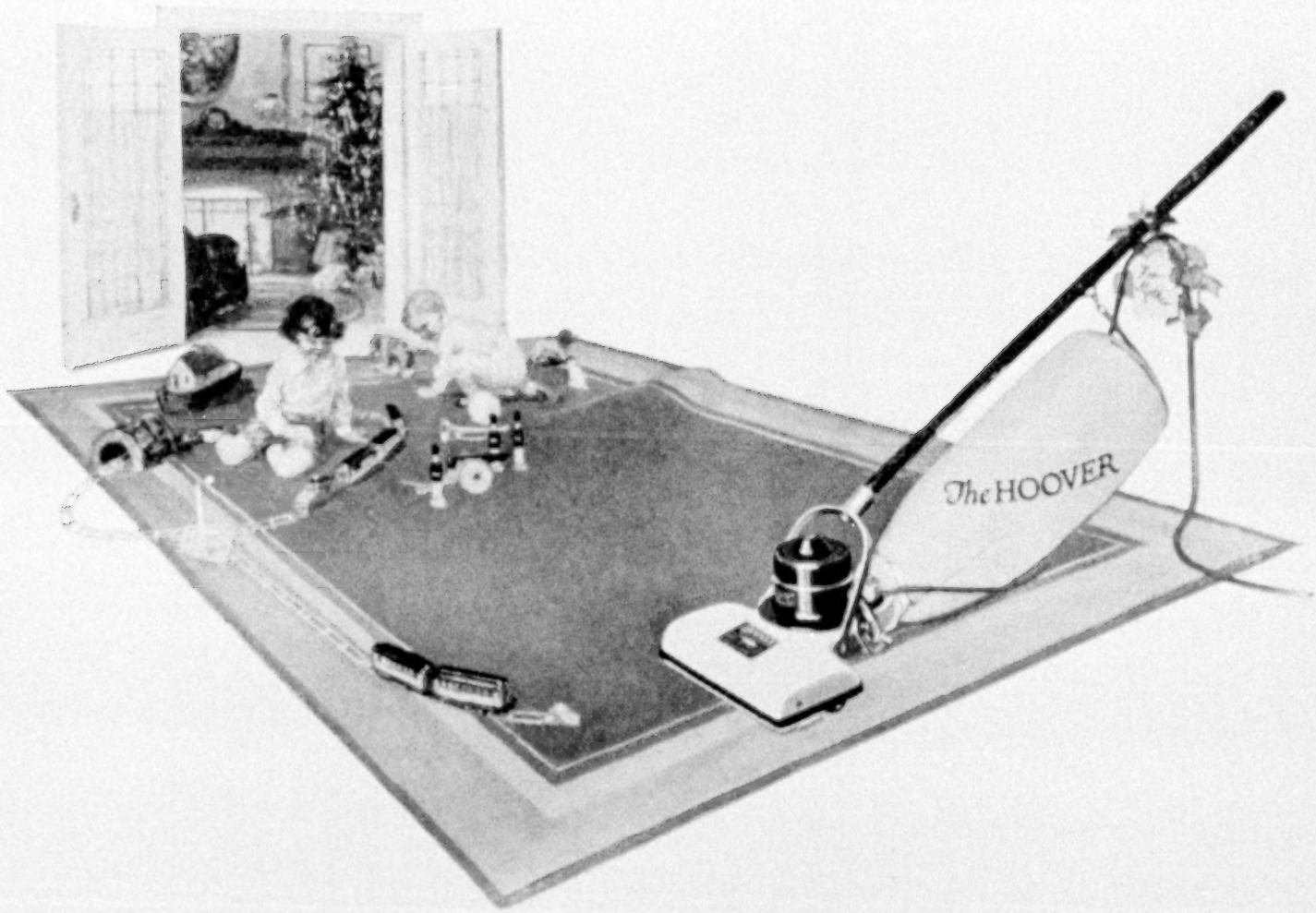

This Christmas, give her a Hoover as a lasting reminder of your thoughtfulness. Give her the joy of an immaculate home, with rugs that are ever clean and attractive. Transform her hours of drudgery into hours of ease and leisure. All these a Hoover means, and more. For this efficient cleaner also lessens many household expenses as well as repeatedly pays for itself by its guaranteed ability to extend the life of rugs. Gently it beats out all nap-wearing grit from rug depths. Electrically it sweeps up stubbornest litter, erects crushed nap, and freshens colors. Powerfully it suction cleans. Only The Hoover does all this. "Give her a Hoover and you give her the best."

The HOOVER

It Beats — as it Sweeps — as it Cleans

Write for booklet, "How to Judge an Electric Cleaner," and names of Authorized Dealers licensed to sell and service Hoovers bearing our guarantee

THE HOOVER SUCTION SWEEPER COMPANY, FACTORIES AT NORTH CANTON, OHIO, AND HAMILTON, ONTARIO

The Hoover lifts the rug from the floor, like this — gently beats out its embedded grit, and so prolongs its life

XUM

"And Man, How I Did Eat Real Food!"

LOOKING BACK, now, to those vacation days, there's a lively kindling of joy—even in the memory of appetite at camp-fire meals.

Real food—and real hunger!

That's the year-around relationship between appetite and Grape-Nuts—that crisp and wholesome gift from the great out-of-doors—the perfected goodness of Nature's best food grains.

There's a flavor and charm to Grape-Nuts that appeal to the appetite like the tang of the summer camp, and there's a scientific balance of nutrition and a readiness of digestion that make Grape-Nuts a wonderful aid to health and vigor.

"Real food!" is the verdict of enthusiastic thousands who find a daily delight in the unique sweetness and crispness of Grape-Nuts, and who "carry on" splendidly with its body-building nourishment.

Let the zest of appetite be a companion of your indoor meals, too.

Grape-Nuts is sold and served wherever good food is sold and served.

"There's a Reason" *for* Grape-Nuts

Made by Postum Cereal Company, Inc.
Battle Creek, Michigan

You Will See

Prettier teeth—safer teeth—in a week

We will send for the asking a new-method tooth paste. Modern authorities advise it. Leading dentists everywhere now urge its daily use.

To millions of people it has brought whiter, safer, cleaner teeth. It will bring them to you and yours. See and feel the delightful results and judge what they mean to you.

Removes the film

It removes the film — the viscous film you feel. No old method ever did that effectively.

Film clings to teeth, gets between the teeth and stays. It dims the teeth and leads to attacks on them. It is the cause of most tooth troubles. Those troubles have been constantly increasing, because old methods failed to combat film effectively.

Film absorbs stains, making the teeth look dingy. Film is the basis of tartar. It holds food substance which ferments and forms acid. It holds the acid in contact with the teeth to cause decay.

Germs breed by millions in it. They, with tartar, are the chief cause of pyorrhea. Also of internal troubles.

Ways to combat it

Dental science has now found two effective film combatants. Able authorities have amply proved them. Now dentists the world over are urging their adoption.

These methods are combined in a dentifrice called Pepsodent — a tooth paste which meets every modern requirement. And a ten-day test is now supplied to every one who asks.

These effects will delight you

Pepsodent removes the film. Then it leaves teeth highly polished, so film less easily adheres.

It also multiplies the salivary flow — Nature's great tooth-protecting agent. It multiplies the starch digestant in the saliva—the factor which digests starch deposits that cling. It multiplies the alkalinity of the saliva—the factor which neutralizes acids.

Every application brings these five effects. The film is combated, Nature's forces are multiplied. The benefits are quickly apparent.

Send the coupon for a 10-Day Tube. Note how clean the teeth feel after using. Mark the absence of the viscous film. See how teeth whiten as the film-coats disappear.

Compare the new way with the old, then decide for yourself which is best. Cut out the coupon now. This is too important to forget.

Pepsodent PAT. OFF. REG. U.S.

The New-Day Dentifrice

A scientific film combatant, whose every application brings five desired effects. Approved by highest authorities, and now advised by leading dentists everywhere. All druggists supply the large tubes.

740

10-Day Tube Free

THE PEPSODENT COMPANY,
Dept. 330, 1104 S. Wabash Ave., Chicago, Ill.
Mail 10-Day Tube of Pepsodent to

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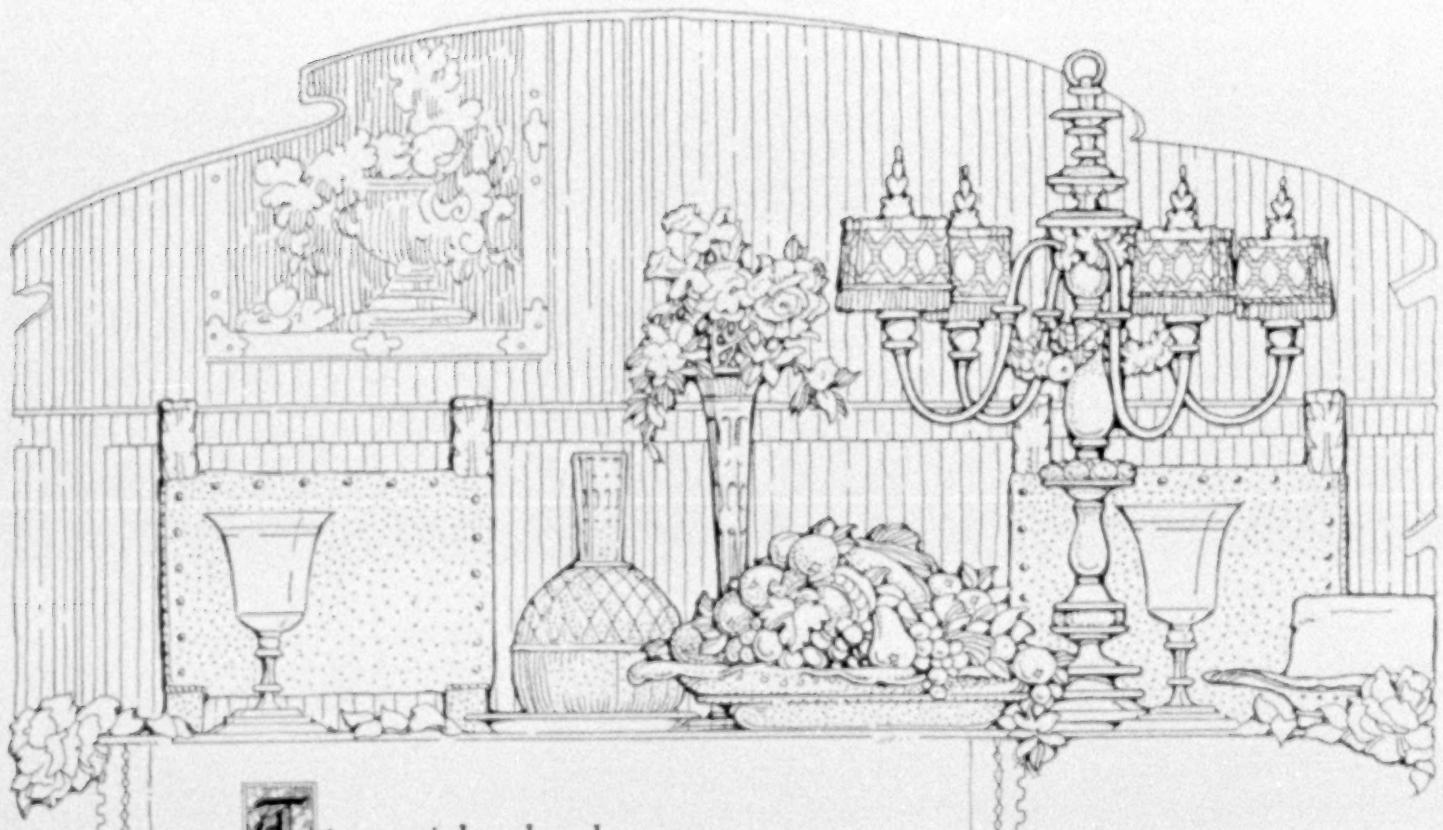
Only one tube to a family

XUM



To enrich the banquet, or to make a banquet of a simple repast — NABISCO Sugar Wafers.

They blend with fruit, ices, beverages, and sherbets as joyous laughter blends with merry conversation. They solve many a problem of hospitality.

Sold in the famous N. B. C.
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NABISCO
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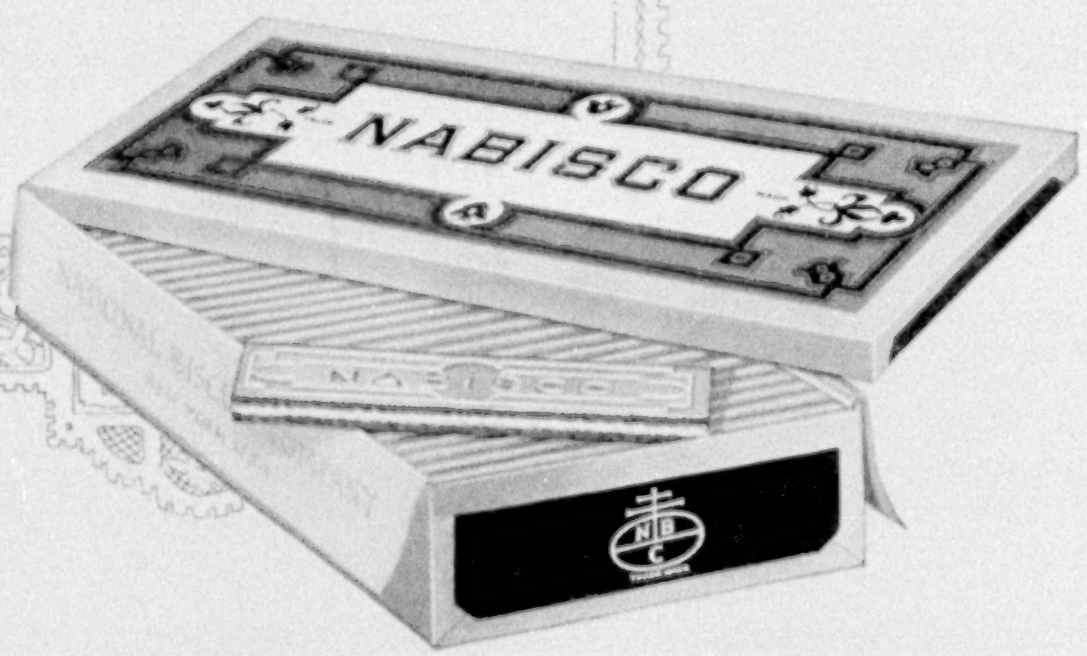

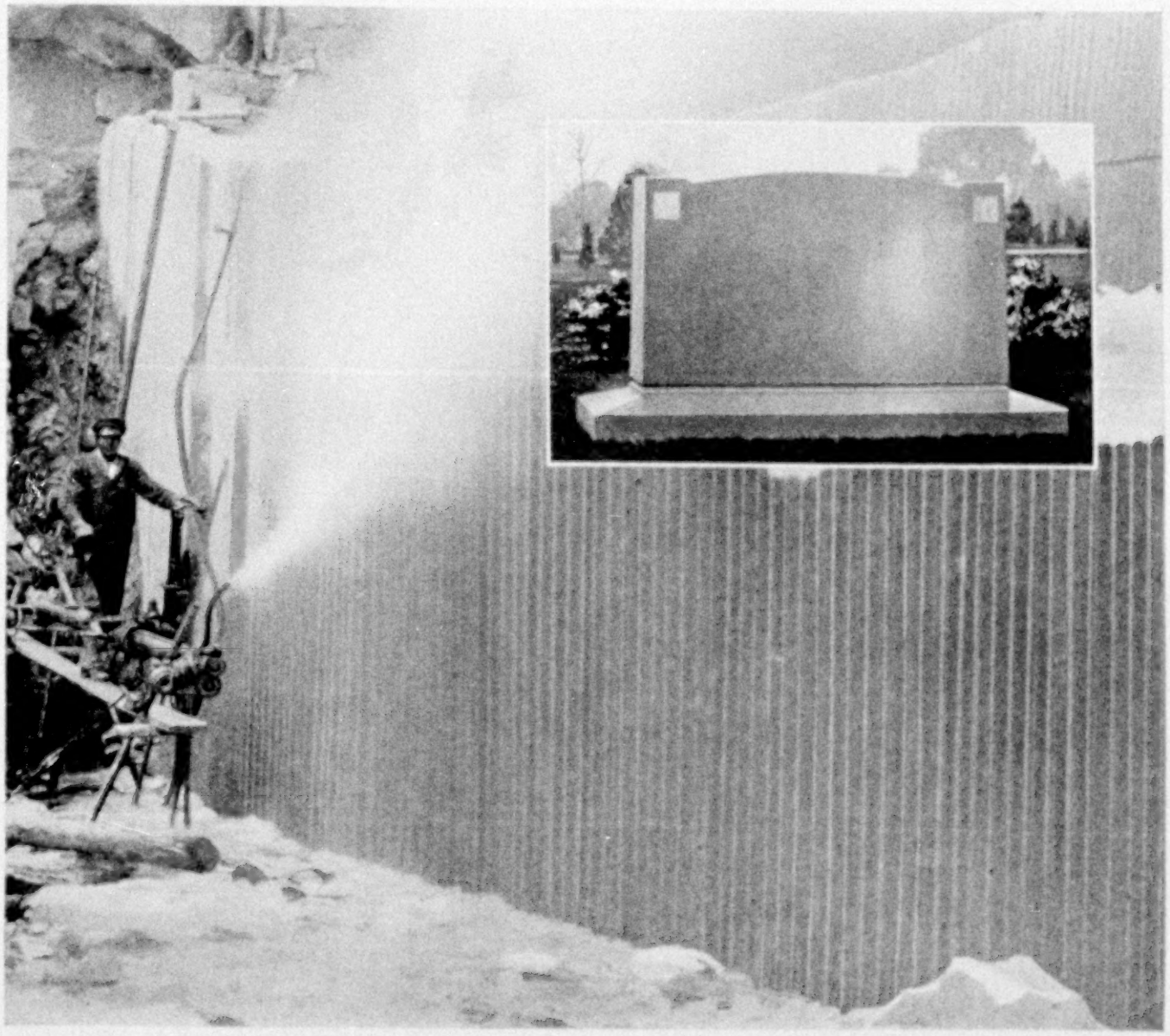

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EVEN as the house which was built upon a rock withstood the wind and flood, so the memorial which is fashioned of ROCK OF AGES Granite defies the elements and counts the passing years as but minutes.

METHODS unknown to former generations surround the quarrying of this everlasting, gray granite. Modern machinery gives to ROCK OF AGES an impervious mirror-like polish that adds character to its fine texture and color.

It is America's finest monumental material—Quarries at Barre.

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ROCK OF AGES

Refer to Dept. E

A memorial selected by you today will be a true expression of your character.

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Style No. 604

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MORE than a superficial inspection is necessary if you would choose really good furniture. Beautiful furniture of unknown make, which to all outward appearances may seem of good quality and workmanship, very often fails to pass the test of time.

Karpen furniture, beautiful and in excellent taste, possesses those inbuilt Karpen qualities which assure the owner of comfort and good appearance even after years of usage.

Wisely then, do discriminating people look for the small Karpen name-plate which is a symbol of unquestioned guarantee.

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Tell me the cost of equipping my building with Chamberlin Metal Weather Strips (check whether Home, Factory, Office Building, Church, School.)

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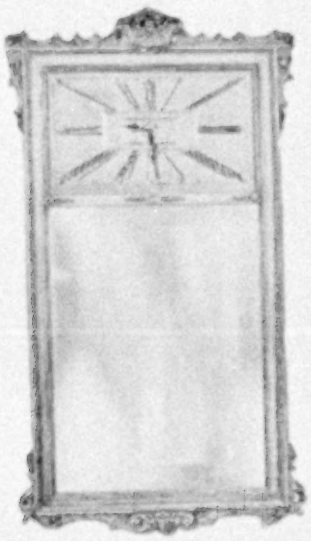
Eng. Dept. C

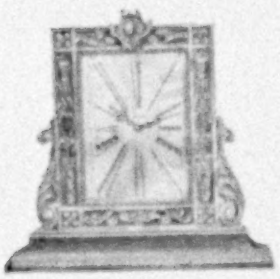
THE SCIENTIFICALLY BUILT WATCH



1125 Waltham Mirror Clock
Antique Gilt and Polychrome
8 day 7 jewel movement
Plain Dial $110. Radium Dial $120

1391 Waltham Boudoir Clock
Mahogany Colors Band Case
8 day 7 jewel movement
Plain Dial $35
Radium Dial $40

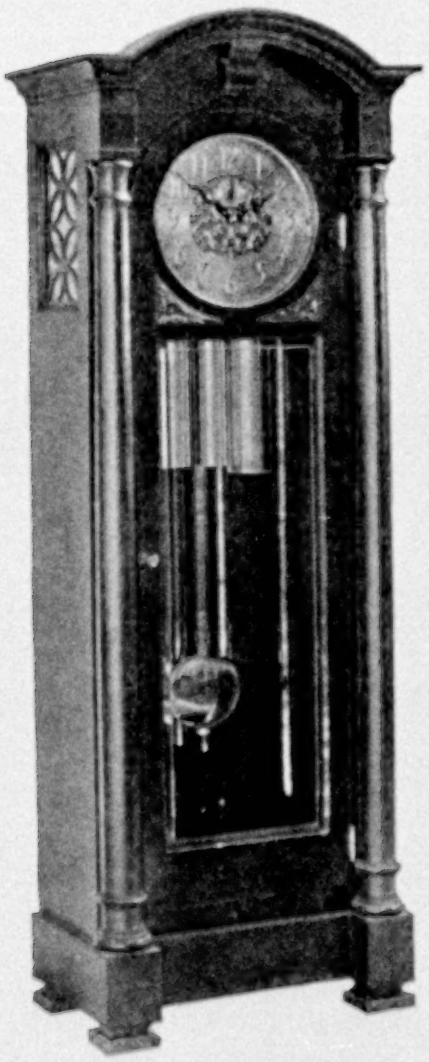
1256 Waltham Traveling Clock
$20 to $30 depending on
dial and movement



1230 Waltham Boudoir Clock
Antique Gold and Brown Case
Plain Dial $40
Radium Dial $45

1268 Waltham Mantel Clock
$105 to $260 according to the movement

1543 Waltham Willard Clock
$85 to $165
According to the movement



983 Waltham Bungalow Clock
$375 to $735 according to
movement and chimes

A Waltham Clock is a Lasting Christmas Gift

A DEPENDABLE clock is a perfect Christmas gift. Its usefulness never diminishes. It is an essential household possession. It is always appreciated.

Waltham Clocks are infinitely superior to ordinary clocks because they are built by watchmakers to watch-making standards.

Waltham skill that created the tiniest watch movement in America is applied to Waltham clock-making.

Waltham Clocks are remarkable for their accuracy. They are built like Waltham Watches.

Waltham Clocks can be purchased in every conceivable type and size. And at prices to suit every pocketbook. From the useful little Traveling Clock to the noble Hall Clock with its beautiful soft chimes.

Then, there are Mantel Clocks and lovely "Willard" reproductions. Also, exquisite Mirror and Boudoir Clocks which have set the fashion for exclusive furnishing. Gems of clock-making art at most reasonable prices.

A Waltham Clock is a lasting Christmas gift. It is dependable, accurate, beautiful.

If your jeweler does not happen to have the particular style of clock that you require, write the Waltham Watch Company, Waltham, Mass., and you will receive a complete, illustrated catalog. Sent free upon request.

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THE WORLD'S WATCH OVER TIME

Where you see this sign they sell Waltham Watches

THE fact that the Smith & Wesson is the revolver selected by those who, through their knowledge, may justly be termed experts, is but added evidence of Smith & Wesson superiority.

SMITH & WESSON

Manufacturers of Superior Revolvers

SPRINGFIELD
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Catalogue sent on request. Address Department H

THIS *85c* ONE-QUART

"Wear-Ever"

Aluminum Stew Pan

40c with coupon

Limited time offer

Once you use this "Wear-Ever" Stew Pan, you will never be satisfied with ordinary utensils. You will go to your nearest dealer and get other "Wear-Ever" utensils until you have a complete "Wear-Ever" kitchen equipment. That is why we are making you this special offer.

The Aluminum Cooking Utensil Co.
Dept. 80 New Kensington, Pa.

The Aluminum Cooking Utensil Co.
Dept. 80 New Kensington, Pa. *(or if you live in Canada)*
Northern Aluminum Co., Ltd., Toronto, Ont.

Enclosed find 40c (in stamps or coin) for which send me prepaid 1-quart "*Wear-Ever*" aluminum stew pan. (Enclose 60c for stew pan and *cover*.) Money to be refunded if not satisfactory. Offer expires Jan. 31, 1922. Good only in U. S. and Canada.

Name .....

Address .....

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A man is known by the teeth he keeps.

Colgate's is recommended by more dentists than any other dentifrice

For the sake of your Looks

as well as your health, use a dentifrice that cleans *thoroughly* and *safely*

COLGATE'S RIBBON DENTAL CREAM is recommended for this specific purpose:—to clean your teeth *thoroughly* and *safely*.

It accomplishes this by the direct action of its principal constituents—fine precipitated chalk and pure vegetable oil soap.

The fine calcium carbonate (chalk) which forms the basis of this *safe* dentifrice, when brought into action by the wet brush, *loosens* deposits that gather upon the teeth.

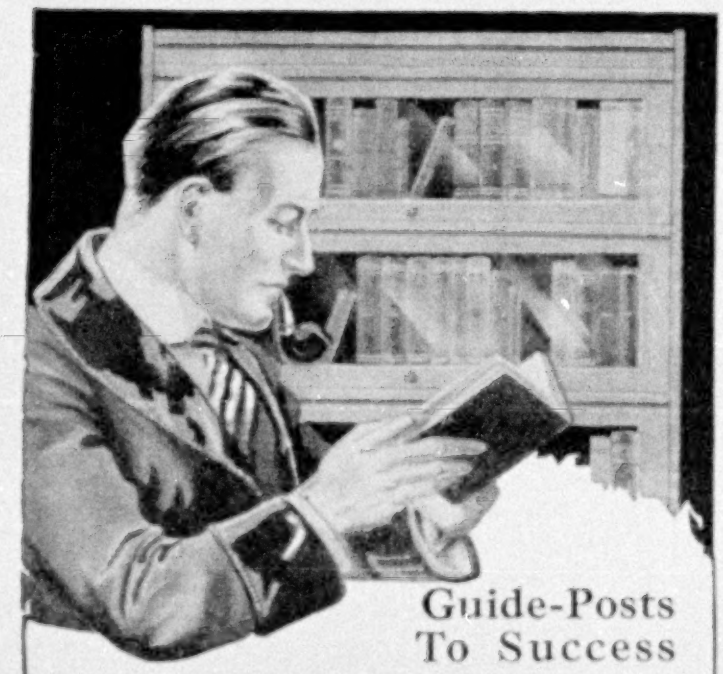
At the same time, *thorough* washing is effected by the pure soap ingredient.

Its delicious flavor makes care of the teeth a treat—not a task. With Colgate's, children are easily taught the healthful habit of brushing their teeth daily. For sale everywhere.

COLGATE & CO. *Est. 1806* NEW YORK
In Canada: 137 McGill Street, Montreal

If you have receding gums, massage them daily. A bit of Colgate's Ribbon Dental Cream, rubbed upon the gums, is an agreeable help in gingival massage.

Truth in advertising implies honesty in manufacture



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Schrader

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were $1.50 now $1.25 each

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Valve Caps were 40c. now 25c.
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You need Schrader Universal Tire Valve Accessories to get the most mileage out of your tires. If your dealer does not stock them, send us his name.

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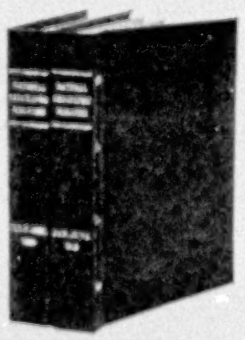

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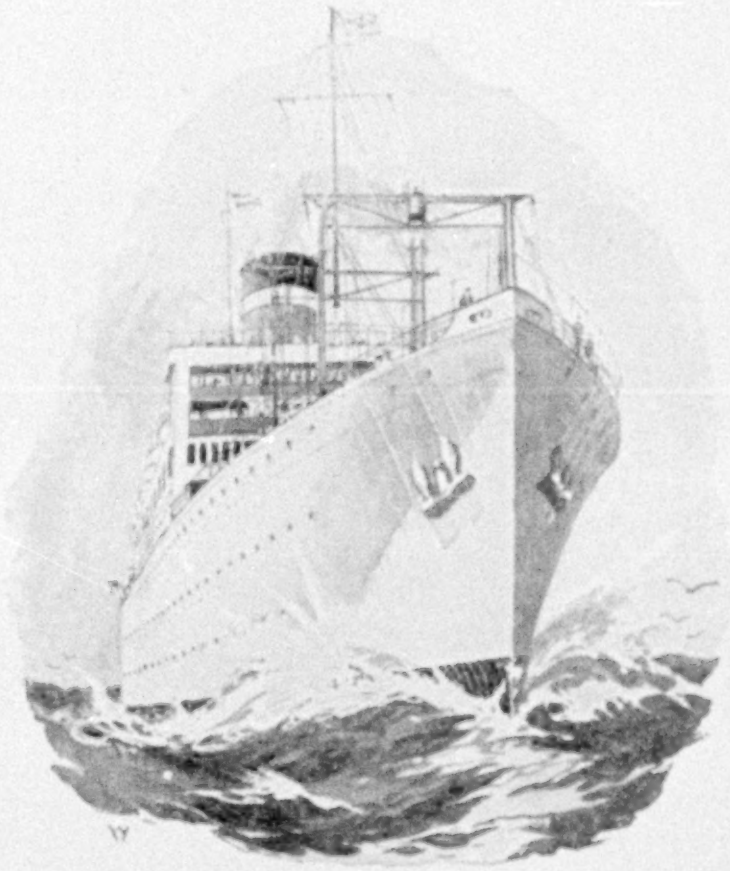

S. S. *American Legion*
S. S. *Southern Cross*

Now 5 Days Less to South America

NEW U. S. Government passenger ships have broken all records from New York to Brazil, Uruguay and Argentine. They have cut five to seven days from the voyage. Only 11 days now to Rio de Janiero.

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Munson Steamship Lines

these Government ships offer speed and accommodations heretofore unknown in the South American Trade. They are among the finest ships afloat. As the result of nearly a half century of experience the Munson Steamship Lines have perfected a service second to none.

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21,000 tons, 1st, 2d and 3d class	
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XUM

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1922 Acousticon

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All you need do is to say that you will try the Acousticon. The test in your own home, amid familiar surroundings, will cost nothing, for we even pay delivery charges.

WARNING! There is no good reason why everyone should not make as liberal a trial offer as we do, so why send money for any instrument for the deaf until you have tried it.

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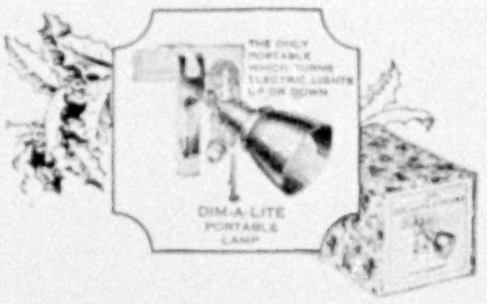

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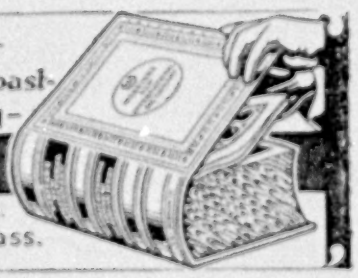

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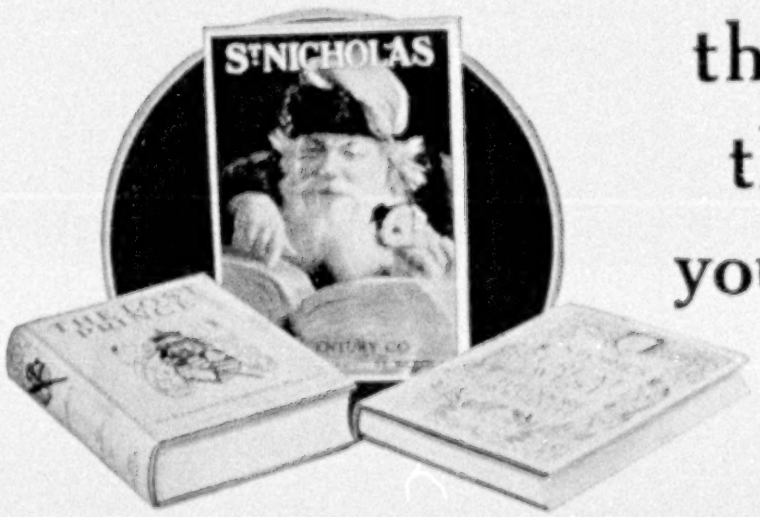

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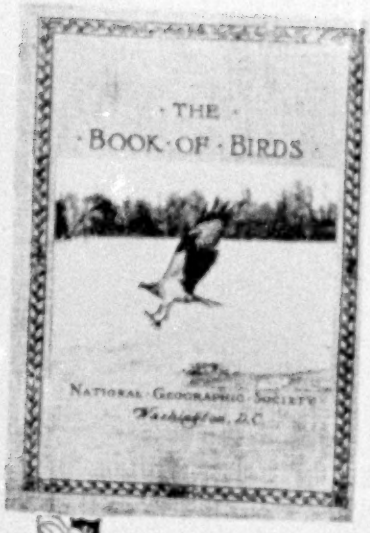

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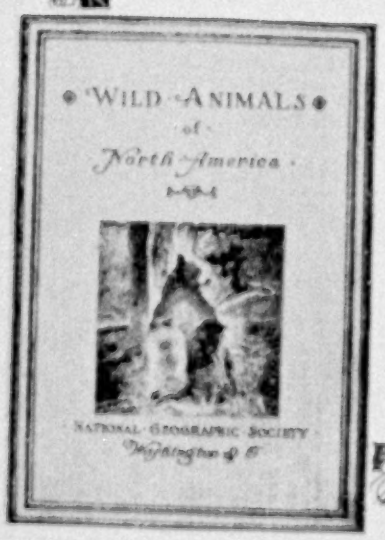

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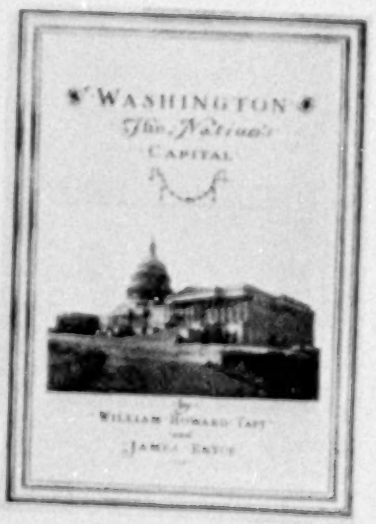

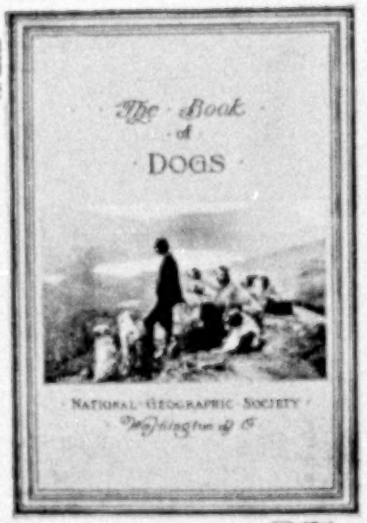

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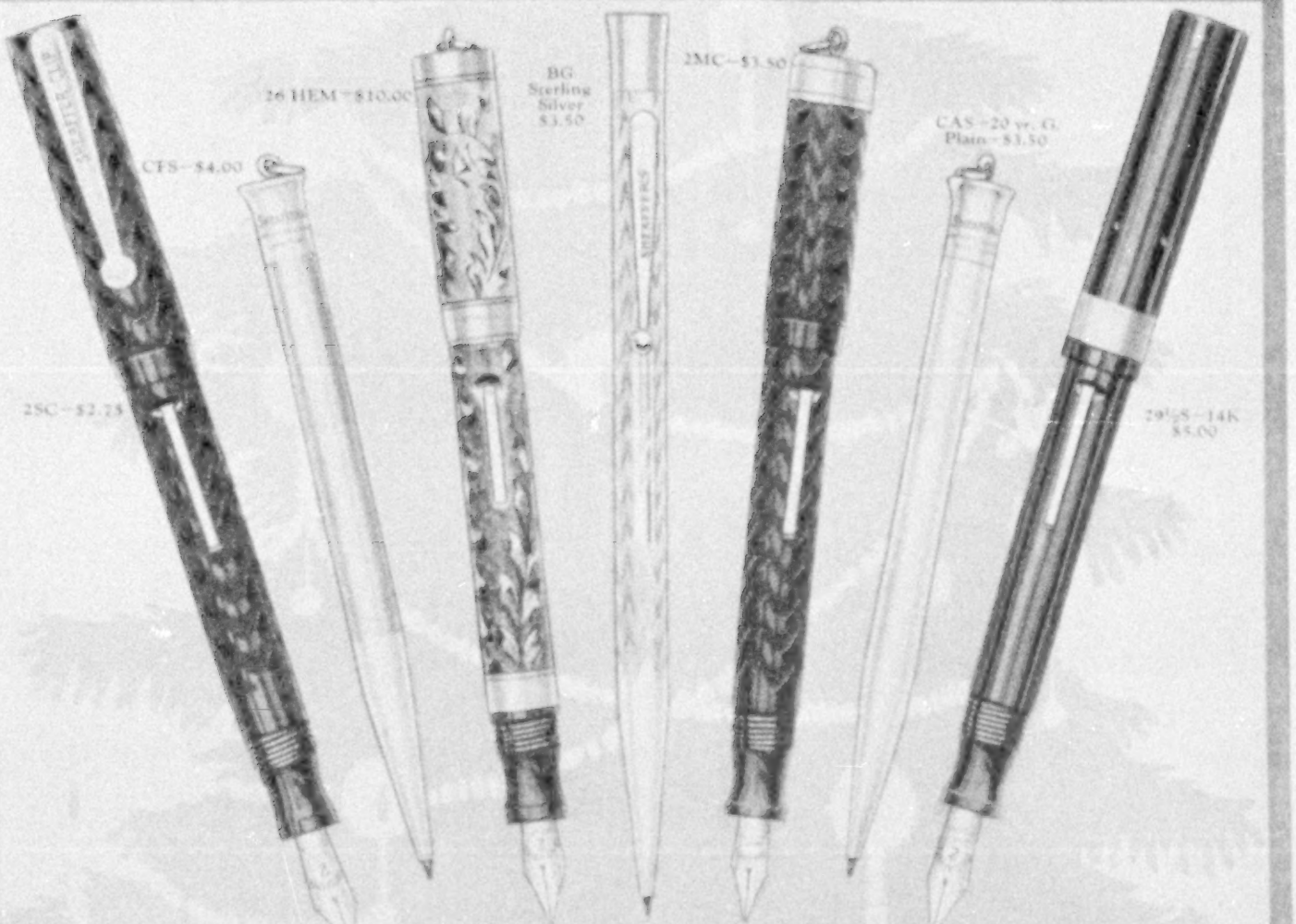

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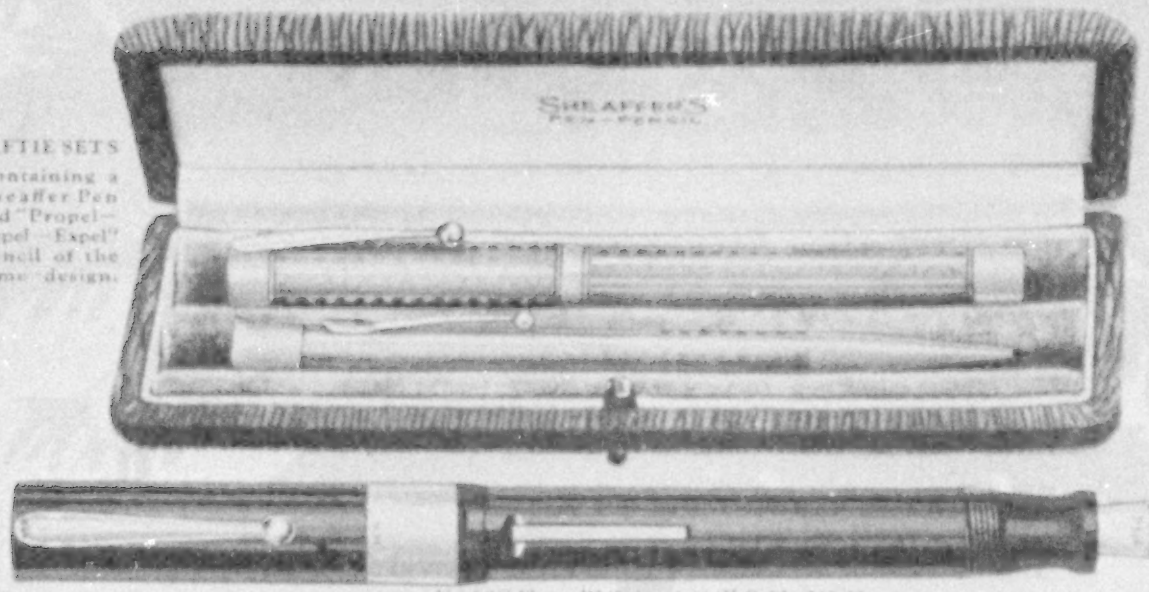

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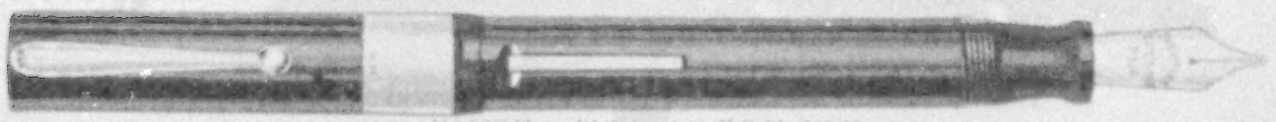

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